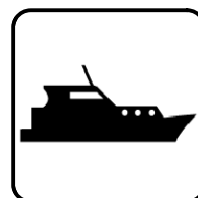


# Service Parts

## Marine Generator Sets



Models:

**5E/4EF**

**7.3E/6EF**

**5ECD/4EFCD-Low CO**

**7.3ECD/6EFCD-Low CO**

**KOHLER®**

POWER SYSTEMS

**9001**  
**KOHLER**  
POWER SYSTEMS  
NATIONALLY REGISTERED

TP-5987 2/06e

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# Introduction

This manual lists service replacement parts for 5E/7.3E and 5ECD/7.3ECD generator sets.

Information in this publication represents data available at the time of print. Kohler Co. reserves the right to change this publication and the products represented without notice and without any obligation or liability whatsoever.

This manual includes the following main sections:

**Table of Contents.** Lists the sections of the manual.

**Introduction (and other information sections).** Contains introductory material about part numbers, illustrations, and hardware.

**Index.** Lists the generator set specs and groups.

**Group Parts Lists.** List the part numbers of parts in the groups.

**Kit Sections.** List modules and accessories and their parts.

**Appendices.** Include Abbreviations, Common Hardware Application Guidelines, General Torque Specifications, Common Hardware Identification, and Common Hardware List.

xin:004:002

## Numbering System Significance

This manual uses the following numbering systems:

**Specification Number.** A six-digit number with a PA-prefix. The Specification Number Index does not show the prefix. Spec numbers break down into groups.

**Group Number.** A unique number representing a parts group needed to assemble a generator set function. For example, Group 101 is the Air Intake group.

**Variation or Module Number.** A group might have several variations. Each variation performs the same function with different parts lists. For example, a 50 Hz generator alternator and 60 Hz generator alternator both perform the same function, however, with different parts. Each difference requires a group variation or module number.

**Part Number.** The part number identifies an individual assembly, subassembly, component, or accessory kit.

xin:004:003

## Illustrations

Illustrations (or exploded-view drawings) best representing the widest range of variations accompany most groups in this manual. Illustrations do not depict all details and may not show all parts. Do not use illustrations for assembly or disassembly.

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## How to Find Part Numbers

Use the following steps to locate a service replacement part.

1. Locate the generator set nameplate to **identify the generator set spec number**.
2. Locate a second generator set nameplate listing accessories to **identify installed modules**. On some models the accessory nameplate is mounted inside the generator junction box.
3. **Turn to the Specification Number Index**. The first column lists the generator set spec numbers. The headings identify the groups of parts that make up the generator set.
4. **Identify the group** most likely to include the service part number.
5. **Find the group variation number** at the intersection of the spec number row and the group column. Note the variation number.
6. **Page forward to locate the group** identified in step 4 or find the appropriate page in the Table of Contents.
7. **Find the part on the illustration** and note the item number of the part or **find the part description in the parts list**.
8. Select the **part number that corresponds to your group variation**. The first column lists the illustration item number. Find the variation identified in the Specification Number Index or the module number found on the generator set nameplate in the appropriate column on the right side of the parts list table. Find the quantity used at the intersection of the item number row and the variation column. A blank space at the intersection means the variation/module does not use that part number.

xin:004:005

## Hardware References

Many common hardware items do not appear in parts manuals or will appear as common hardware entries. A common hardware entry lists the size of the hardware. For example, an item that appears as "Hardware, 3/8-16" in the text means that the piece is 3/8-16 size. Obtain common hardware locally or, if contacting the factory, use the Common Hardware List in the appendix to identify the common hardware part number and specifications. See Common Hardware Application Guidelines in the appendix for mating hardware instructions.

Some hardware items require a specific size or some other characteristic. In that case, use the part number listed in the text.

**When replacing hardware, do not substitute inferior grade hardware.** Replacement hardware grade should be equal to or better than the grade of the manufacturer's original hardware. Use the Common Hardware List in the appendix to identify the common hardware hardness.

xin:004:006

# Specification Number Index

Group Title	<i>Cylinder and Crankcase</i>	<i>Piston and Crankshaft</i>	<i>Valves and Camshaft</i>	<i>Lubrication and Oil Filter</i>	<i>Ignition</i>	<i>Governor</i>	<i>Carburetor</i>	<i>Starter</i>	<i>Engine Cooling</i>
Group No.	1	2	3	4	5	6	7	9	10
Spec No.	Variation Number								

5E									
PA-19903	1	1	1	1	1	1	1	1	1
PA-19904	1	1	1	1	1	1	1	1	1
PA-19905	1	1	1	1	1	1	1	1	1
GM29235-GA1	1	2	2	2	1	2	1	1	2
GM35004-GA1	1	2	2	2	1	2	1	1	2
7.3E									
PA-19901	1	1	1	1	1	1	1	1	1
PA-19902	1	1	1	1	1	1	1	1	1
PA-19906	1	1	1	1	1	1	1	1	1
GM29235-GA2	1	2	2	2	1	2	1	1	2
GM35004-GA2	1	2	2	2	1	2	1	1	2

Group Title	<i>Air Intake</i>	<i>Fuel System</i>	<i>Cooling System</i>	<i>Engine</i>	<i>Nameplates and Decals</i>	<i>Skid and Plant Mounting</i>	<i>Exhaust System</i>	<i>Generator and Mounting</i>	<i>Controller and Mounting</i>	<i>Literature</i>
Group No.	101	103	104	105	107	109	116	201	301	701
Spec No.	Variation Number									

5E										
PA-19903	1	1	1	1	3	1	1	1	3	1
PA-19904	1	1	1	2	1	1	1	1	4	1
PA-19905	1	1	1	2	3	1	1	1	7	1
GM29235-GA1	1	1	1	3	3	1	1	1	7	1
GM35004-GA1	1	1	2	3	3	1	2	1	7	1
7.3E										
PA-19901	1	1	1	1	3	1	1	1	1	2
PA-19902	1	1	1	2	1	1	1	1	2	2
PA-19906	1	1	1	2	3	1	1	1	7	2
GM29235-GA2	1	1	1	3	3	1	1	1	7	2
GM35004-GA2	1	1	2	3	3	1	2	1	7	2

# Specification Number Index

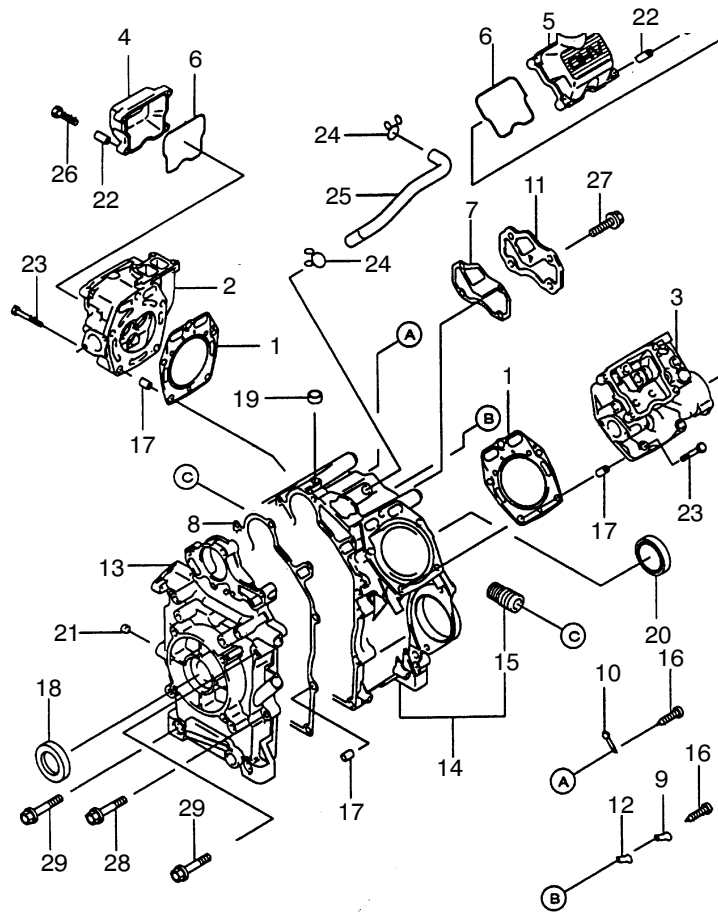
Group Title	<i>Cylinder and Crankcase</i>	<i>Piston and Crankshaft</i>	<i>Valves and Camshaft</i>	<i>Lubrication and Oil Filter</i>	<i>Ignition</i>	<i>Governor</i>	<i>Carburetor</i>	<i>Starter</i>	<i>Engine Cooling</i>
Group No.	1	2	3	4	5	6	7	9	10
Spec No.	Variation Number								

<b>4EFCD</b>									
GM39685-GA3	1	2	2	2	2	-	-	1	3
<b>5ECD</b>									
GM39685-GA1	1	2	2	2	2	-	-	1	3
<b>6EFCD</b>									
GM39685-GA4	1	2	2	2	2	-	-	1	3
<b>7.3ECD</b>									
GM39685-GA2	1	2	2	2	2	-	-	1	3

Group Title	<i>Air Intake</i>	<i>Fuel System</i>	<i>Cooling System</i>	<i>Engine</i>	<i>Nameplates and Decals</i>	<i>Skid and Plant Mounting</i>	<i>Exhaust System</i>	<i>Generator and Mounting</i>	<i>Controller and Mounting</i>	<i>Literature</i>
Group No.	101	103	104	105	107	109	116	201	301	701
Spec No.	Variation Number									

<b>4EFCD</b>										
GM39685-GA3	2	2	3	5	5	1	3	2	8	4
<b>5ECD</b>										
GM39685-GA1	2	2	3	4	4	1	3	2	8	4
<b>6EFCD</b>										
GM39685-GA4	2	2	3	5	5	1	3	2	8	5
<b>7.3ECD</b>										
GM39685-GA2	2	2	3	4	4	1	3	2	8	5

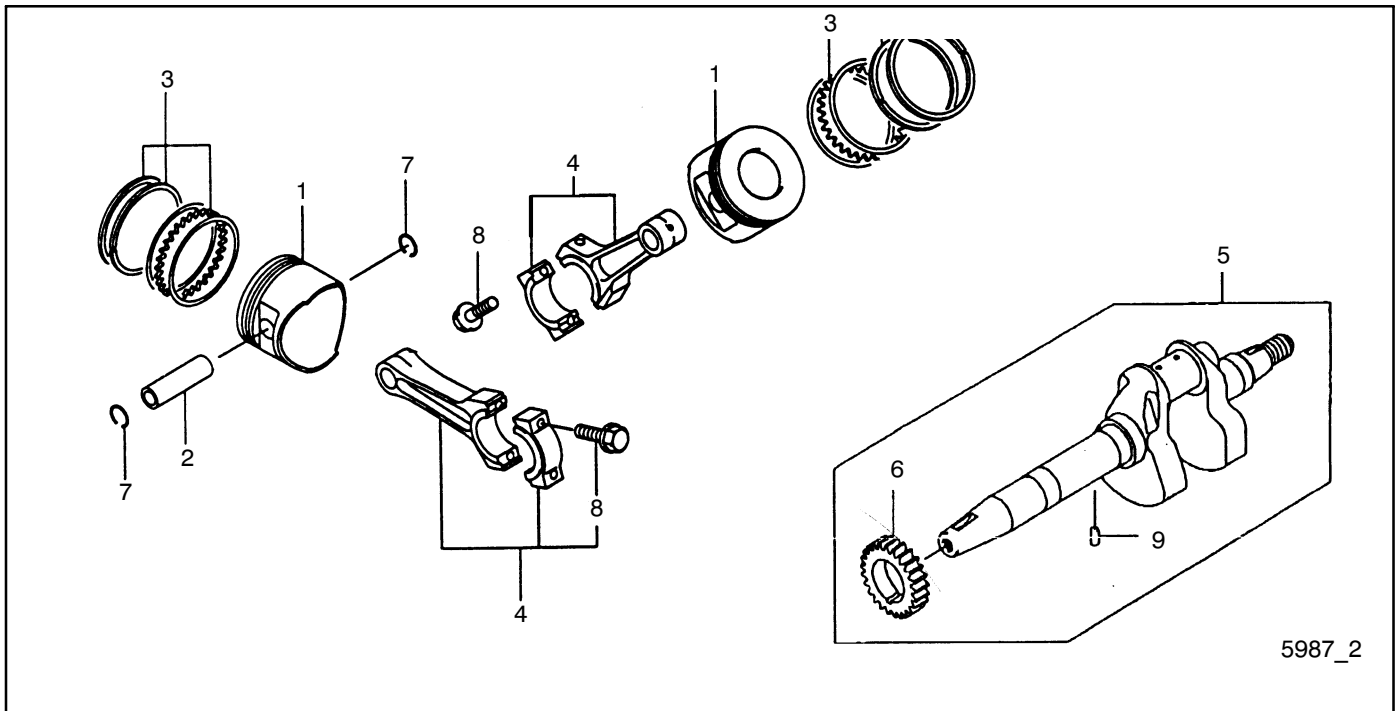
# Group 1: Cylinder and Crankcase



5987\_1

Item	Part No.	Description	Qty. Var. 1
1	359701	Gasket, head	2
2	359702	Cylinder head (for engine model AS 04)	1
2	359981	Cylinder head	1
3	359703	Cylinder head (for engine model AS 04)	1
3	359982	Cylinder head	1
4	359704	Case, rocker	1
5	359705	Case, rocker (includes oil fill spout)	1
6	359706	Gasket, rocker case	2
7	359707	Gasket	1
8	359708	Gasket, crankcase cover	1
9	359709	Plate	1
10	359710	Plate	1
11	359711	Cover	1
12	359712	Valve	1
13	359714	Cover, crankcase	1
14	359715	Crankcase, complete	1
15	359716	Joint	1
16	359719	Screw	2
17	359720	Pin	6
18	359721	Seal, oil	1
19	359722	Seal, oil	1
20	359723	Seal, oil	1
21	359724	Plug	2
22	359725	Collar	8
23	359726	Bolt	10
24	359727	Clamp	2
25	359728	Tube	1
26	359729	Bolt, flanged	8
27	359730	Bolt, flanged	4
28	359731	Bolt, flanged	3
29	359732	Bolt, flanged	3

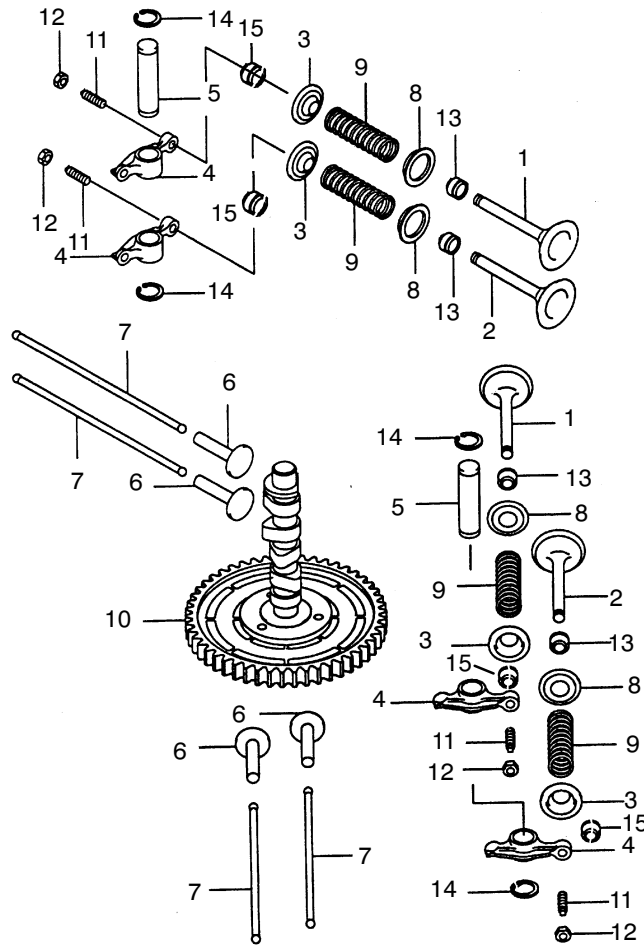
## Group 2: Piston and Crankshaft



Item	Part No.	Description	Qty. Var.	
			1	2
1	359734	Piston (generator set serial numbers before 758309)	2	
1	GM29868	Piston (engine model ES04; generator set serial numbers 758309 and after)	2	
1	GM29868	Piston		2
1	359739	Piston, 0.25 OS	AR	
1	359740	Piston, 0.50 OS (generator set serial numbers before 758309)	AR	
1	GM29871	Piston, 0.50 OS (engine model ES04; generator set serial numbers 758309 and after)	AR	
1	GM29871	Piston, 0.50 OS		AR
2	359735	Pin, piston	2	2
3	359736	Ring set, piston (generator set serial numbers before 758309)	2	
3	GM29869	Ring set, piston (engine model ES04; generator set serial numbers 758309 and after)	2	
3	GM29869	Ring set, piston		2
3	359737	Ring set, piston, 0.025 OS	AR	
3	359738	Ring set, piston, 0.50 OS (generator set serial numbers before 758309)	AR	
3	GM29870	Ring set, piston, 0.50 OS (engine model ES04; generator set serial numbers 758309 and after)	AR	
3	GM29870	Ring set, piston, 0.50 OS		AR
4	359741	Connecting rod assembly	2	2
5	359742	Crankshaft assembly (generator set serial numbers before 758309)	1	
5	GM29872	Crankshaft assembly (engine model ES04; generator set serial numbers 758309 and after)	1	
5	GM29872	Crankshaft assembly		1
6	359743	Gear spur (generator set serial numbers before 758309)	1	
6	GM29873	Gear spur (engine model ES04; generator set serial numbers 758309 and after)	1	
6	GM29873	Gear spur		1
7	359746	Ring, snap	4	4
8	359748	Bolt, connecting rod	4	4
9	359749	Pin, dowel	1	1

AR As Required

## Group 3: Valves and Camshaft

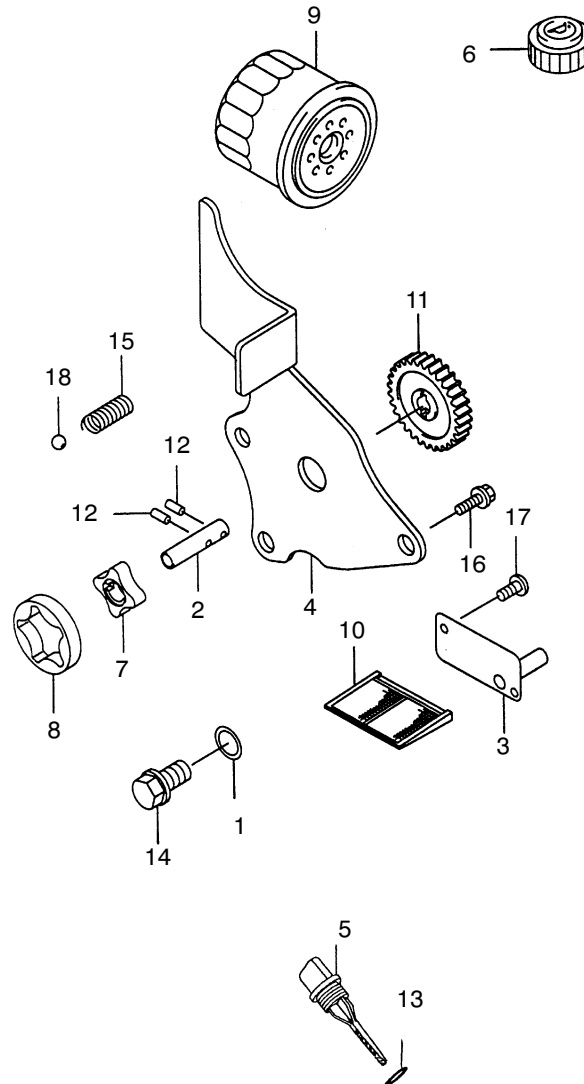


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Item	Part No.	Description	Qty.	
			1	2
1	359750	Valve, intake (for engine model AS 04 and BS 04)	2	2
1	359983	Valve, intake	2	2
2	359751	Valve, exhaust (for engine model AS 04 and BS 04)	2	2
2	359984	Valve, exhaust	2	2
3	359752	Retainer, valve spring (for engine model AS 04 and BS 04)	4	4
3	359985	Retainer, valve spring	4	4
4	359753	Arm, rocker	4	4
5	359754	Shaft, rocker	2	2
6	359755	Tappet	4	4
7	359756	Rod, push	4	4
8	359757	Seat, spring	4	4
9	359758	Spring, engine valve (for engine model AS 04 and BS 04)	4	4
9	359986	Spring, engine valve	4	4
10	359759	Camshaft, complete (generator set serial numbers before 758309)	1	
10	GM29874	Camshaft, complete (engine model ES04; generator set serial numbers 758309 and after)	1	
10	GM29874	Camshaft, complete		1
11	359760	Screw	4	4
12	359761	Nut	4	4
13	359762	Seal, oil	4	4
14	359763	Circlip	4	4
15	359987	Collet	8	8



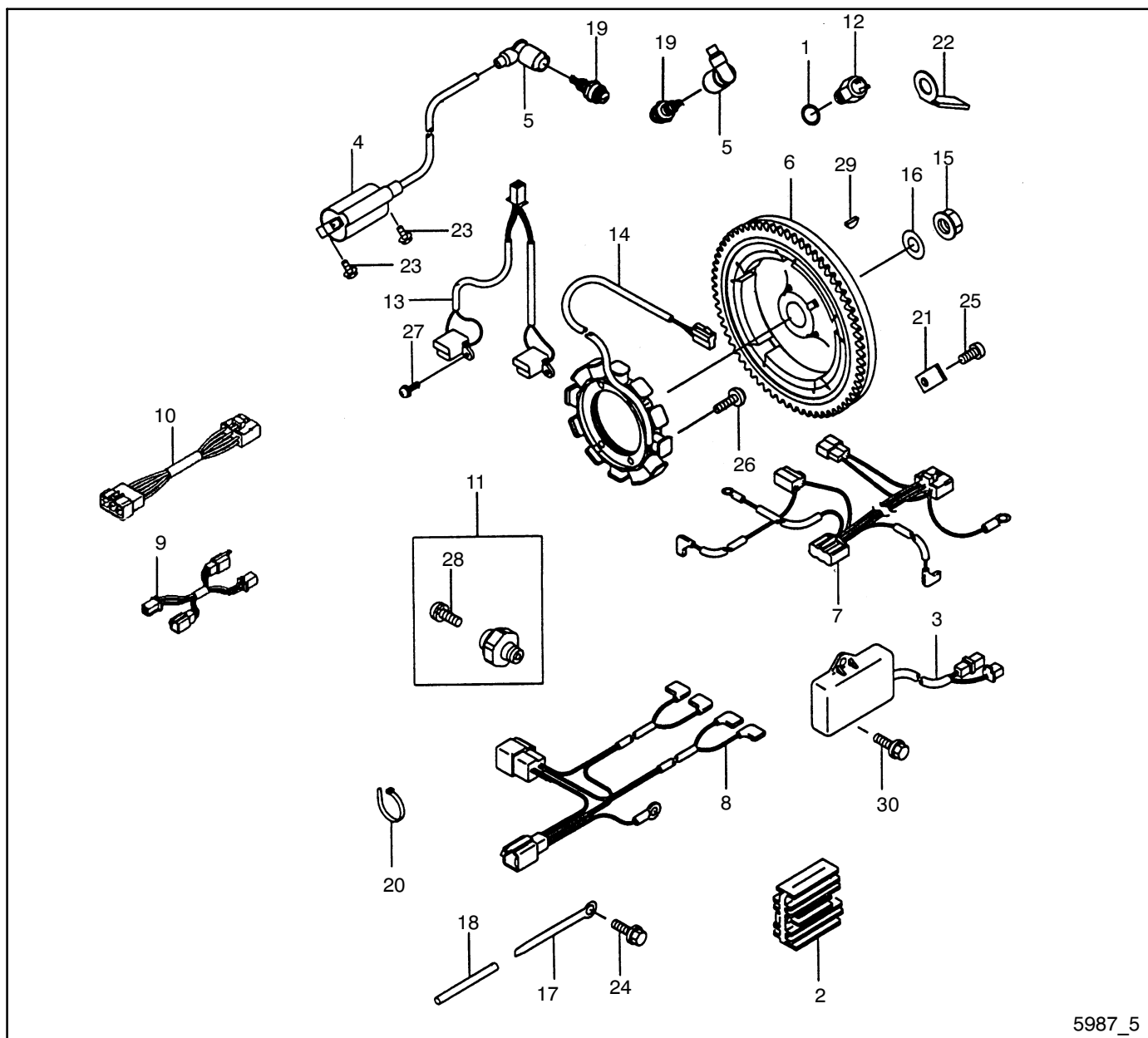
## Group 4: Lubrication and Oil Filter



5987\_4

Item	Part No.	Description	Qty.	
			1	2
1	359764	Gasket, drain plug	1	1
2	359765	Shaft, oil pump	1	1
3	359766	Plate	1	1
4	359767	Cover	1	1
5	359773	Dipstick	1	1
6	359768	Cap, oil fill	1	1
7	359769	Rotor, oil pump (in)	1	1
8	359770	Rotor, oil pump (out)	1	1
9	359771	Oil filter	1	1
10	359772	Oil filter screen	1	1
11	359774	Gear spur (generator set serial numbers before 758309)	1	
11	GM29875	Gear spur (engine model ES04; generator set serial numbers 758309 and after)	1	
11	GM29875	Gear spur		1
12	359775	Pin	2	2
13	359902	Ring, 0.20 mm	1	1
14	359776	Plug, drain	1	1
15	359777	Spring	1	1
16	359778	Bolt, flanged	3	3
17	359779	Screw, pan	2	2
18	359780	Ball, steel	1	1

## Group 5: Ignition

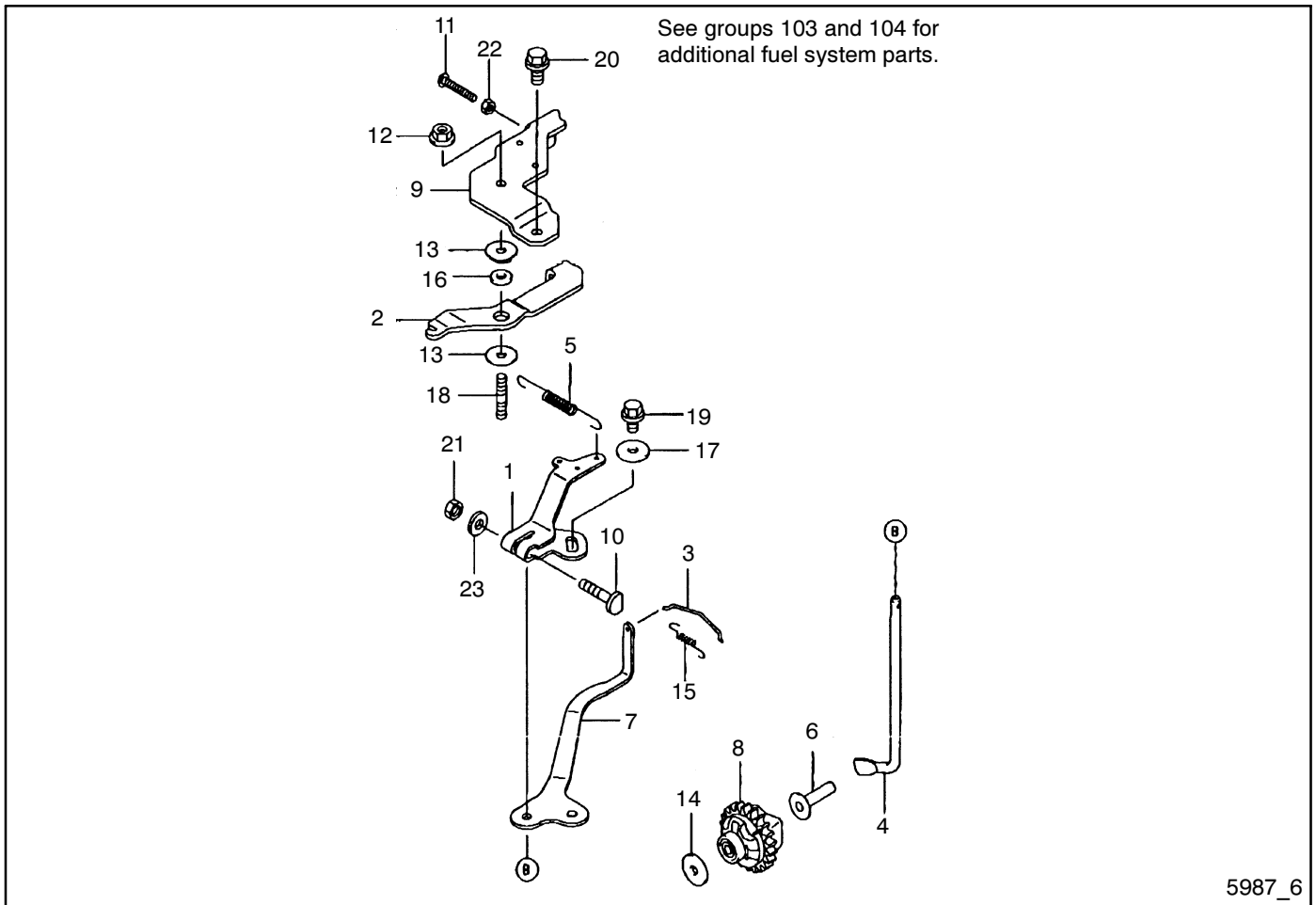


5987\_5

Item	Part No.	Description	Qty.	
			1	2
1	359781	Gasket	1	1
2	359782	Voltage regulator	1	1
3	359783	Igniter	1	
4	359784	Coil, ignition	2	
4	—	Coil (See Group 105)		2
5	359785	Cap, spark plug	2	
5	—	Cap (See Group 105)		2
6	359786	Flywheel assembly	1	1
7	359787	Harness	1	
8	359788	Harness	1	
9	359903	Harness	1	
10	359904	Harness	1	
11	359789	Switch, oil pressure	1	1
12	359790	Switch, temperature	1	1
13	359791	Coil, pulsing	1	
14	359792	Coil, charging	1	1
15	359807	Nut, hex	1	1

Item	Part No.	Description	Qty.	
			1	2
16	359793	Washer	1	1
17	359794	Clamp	2	2
18	359795	Tube	2	2
19	359796	Spark plug (for engine model AS 04)	2	
19	359799	Spark plug	2	
19	GM46180	Spark plug		2
20	359797	Band	3	
21	359798	Clamp	1	
22	359799	Clamp	2	
23	359800	Bolt, flanged	4	
24	359801	Bolt, flanged	2	2
25	359803	Screw, pan	1	
26	359804	Screw, pan	4	4
27	359805	Screw, pan	4	
28	359806	Screw, pan	1	1
29	359808	Key, woodruff	1	1
30	X-67-116	Screw, hex washer, thread- forming	2	2

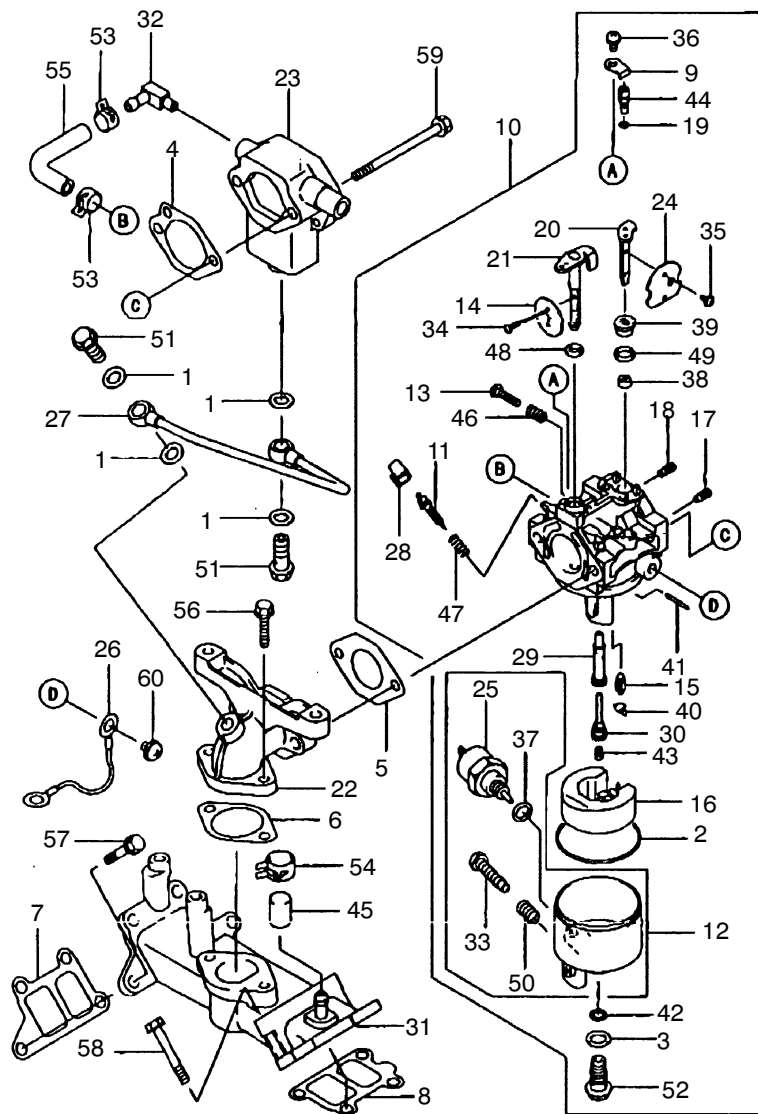
## Group 6: Governor



5987\_6

Item	Part No.	Description	Qty.	
			1	2
1	359809	Bracket	1	1
2	359810	Lever	1	1
3	359813	Link	1	1
4	359814	Pivot arm	1	1
5	359815	Spring, governor	1	1
6	359816	Sleeve	1	1
7	359817	Arm, governor (for engine model AS 04 and BS 04)	1	1
7	359888	Arm, governor	1	1
8	359818	Governor assembly (generator set serial numbers before 758309)	1	
8	GM29878	Governor assembly (engine model ES04; generator set serial numbers 758309 and after)	1	
8	GM29878	Governor assembly		1
9	359819	Panel, control	1	1
10	359820	Bolt	1	1
11	359821	Screw	2	2
12	359822	Nut	1	1
13	359823	Washer	3	3
14	359905	Spacer	1	1
15	359825	Spring	1	1
16	359826	Collar	1	1
17	359832	Washer	1	1
18	359833	Stud	1	1
19	359834	Bolt (for engine model AS 04 and BS 04)	1	1
19	359989	Bolt	1	1
20	359835	Bolt	2	2
21	359836	Nut, hex	1	1
22	359837	Nut, hex	2	2
23	359838	Washer	1	1

## Group 7: Carburetor

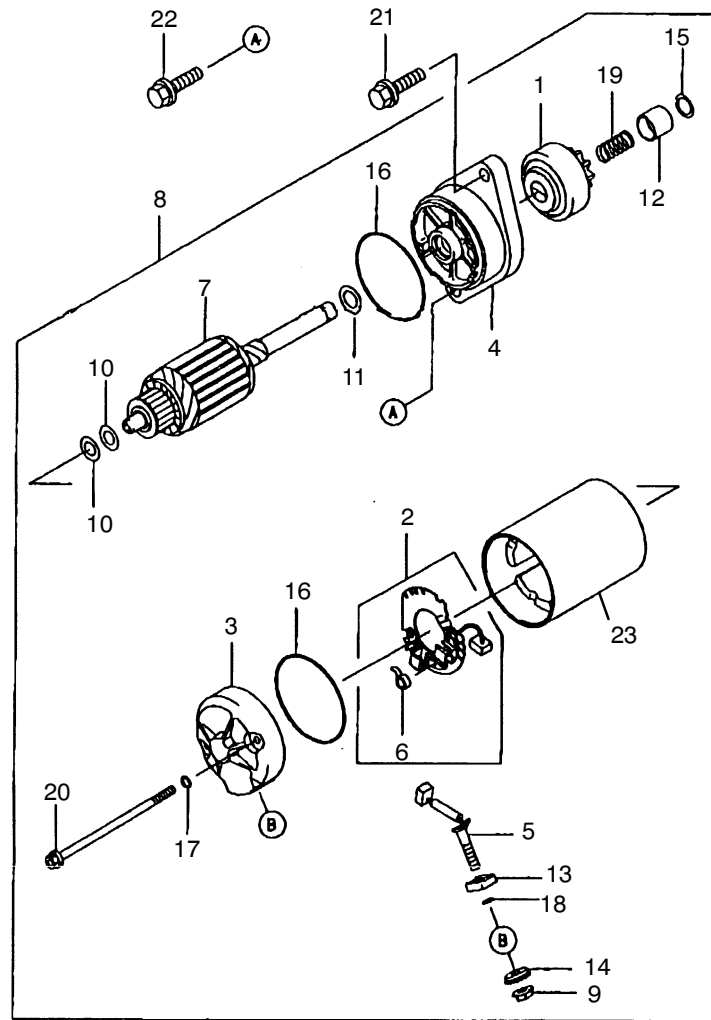


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## Group 7: Carburetor

Item	Part No.	Description	Qty. Var. 1
1	359906	Gasket	4
2	359839	Gasket	1
3	359840	Gasket	1
4	359841	Gasket, air filter	1
5	359842	Gasket, carburetor	1
6	359843	Gasket, intake pipe	1
7	359844	Gasket, intake manifold	1
8	359845	Gasket, intake manifold	1
9	359846	Plate	1
10	359847	Carburetor assembly	1
10	GM24510	Carburetor repair kit	1
11	359848	Screw, pilot air	1
12	359849	Float chamber	1
13	359850	Screw, throttle stop	1
14	359851	Valve, throttle	1
15	359852	Float valve	1
16	359853	Float	1
17	359854	Air jet 1.2	1
18	359855	Air jet 0.8	1
19	359856	Gasket	1
20	359857	Shaft, carburetor choke	1
21	359858	Shaft, carburetor	1
22	359859	Pipe, intake	1
23	359860	Pipe, intake	1
24	359861	Valve, choke	1
25	359862	Solenoid	1
26	359907	Wire lead	1
27	359908	Pipe	1
28	359863	Limiter	1
29	359864	Nozzle, main	1
30	359865	Holder, main jet	1
31	359866	Intake manifold	1
32	359909	Fitting	1
33	359867	Screw	1
34	359868	Screw	2
35	359869	Screw	2
36	359870	Screw	1
37	359871	Washer	1
38	359872	Collar	1
39	359873	Collar	1
40	359874	Ring, snap	1
41	359876	Pin	1
42	359877	O-ring	1
43	359879	Main jet	1
44	359880	Pilot jet	1
45	359911	Plug	1
46	359881	Spring	1
47	359882	Spring	1
48	359883	Seal	1
49	359884	Seal	1
50	359885	Spring	1
51	359886	Bolt	1
52	359912	Bolt	1
53	359913	Clamp	1
54	359914	Clamp	1
55	359887	Tube	1
56	359888	Bolt, flanged	2
57	359889	Bolt, flanged	5
58	359890	Bolt, flanged	3
59	359891	Bolt, flanged	2
60	359915	Screw	1

## Group 9: Starter

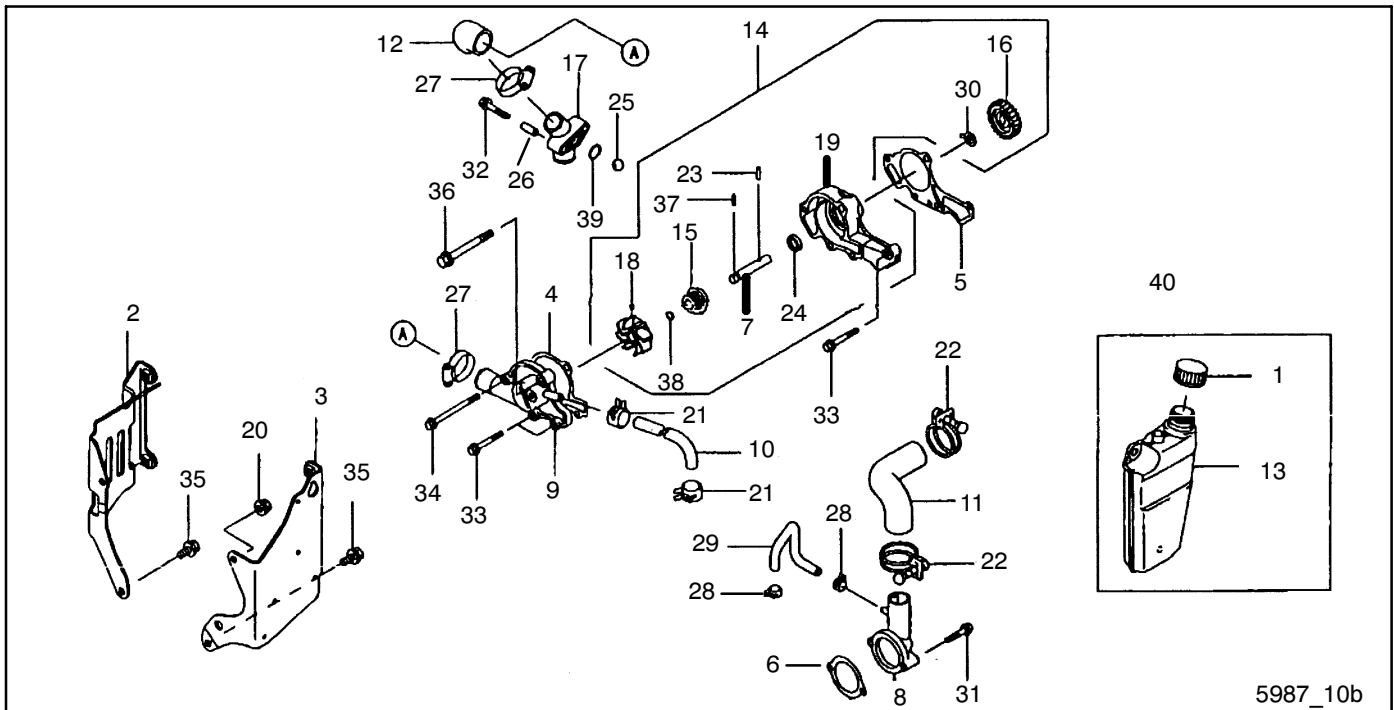


5987\_9

Item	Part No.	Description	Qty. Var.
1	359917	Clutch assembly	1
2	359918	Holder assembly	1
3	359919	Cover assembly	1
4	359920	Cover assembly	1
5	359921	Brush	1
6	359922	Spring, brush	2
7	359923	Armature	1
8	359924	Starter	1
9	359925	Nut	1
10	359926	Washer	2
11	359927	Washer	1
12	359928	Collar	1

Item	Part No.	Description	Qty. Var.
13	359929	Bushing	1
14	359930	Bushing	1
15	359931	Ring, snap	1
16	359932	O-ring	2
17	359933	O-ring	2
18	359934	O-ring	1
19	359935	Spring	1
20	359936	Bolt	2
21	359937	Bolt	1
22	359938	Bolt, flanged	1
23	—	Not sold separately	1

## Group 10: Engine Cooling

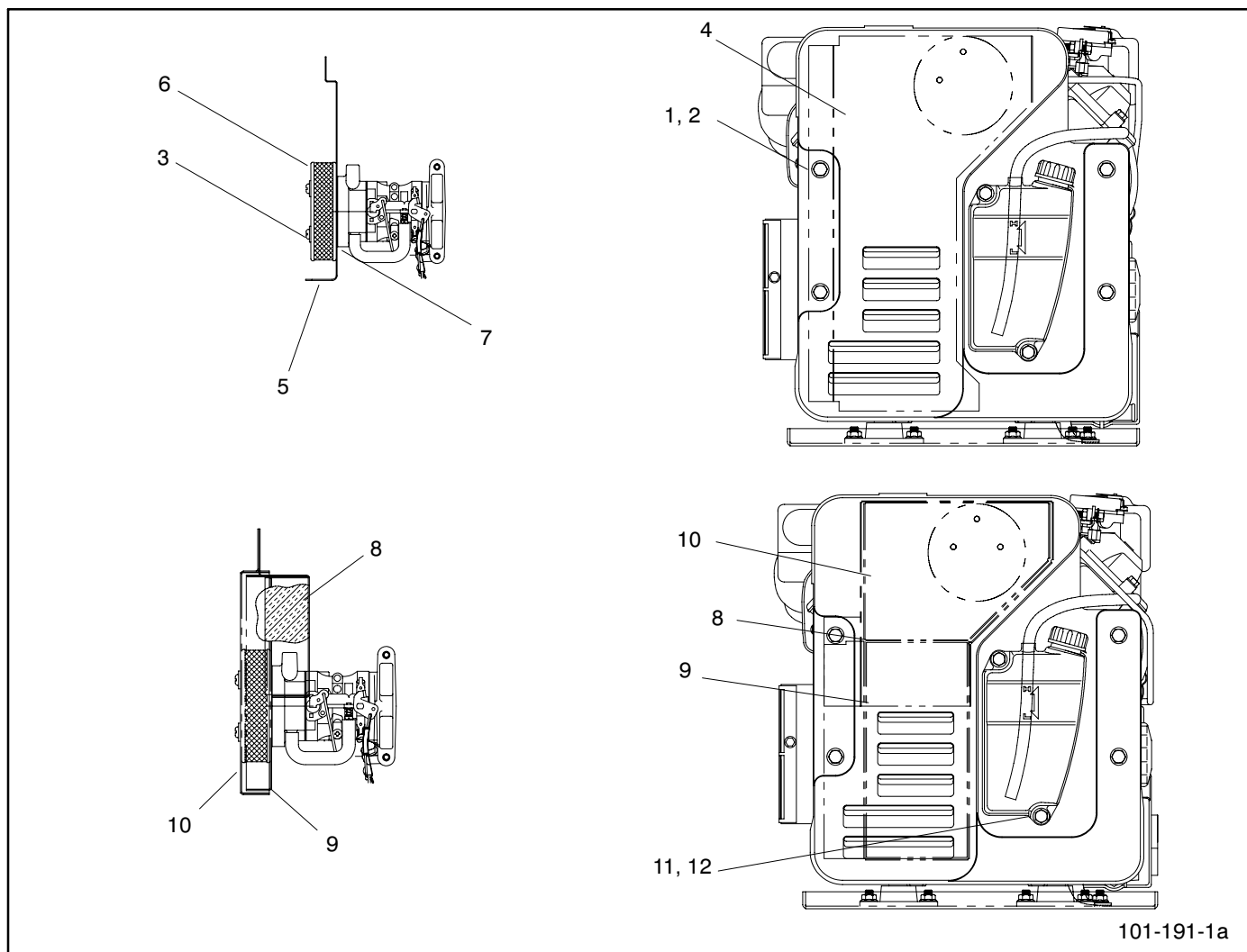


5987\_10b

Item	Part No.	Description	Qty.		
			1	2	3
1	359939	Cap	1	1	1
2	359940	Bracket	1	1	1
2	—	Bracket (See Group 105)			1
3	359941	Bracket	1	1	1
4	359942	Gasket, water pump	1	1	1
5	359943	Gasket, water pump	1	1	1
6	359944	Gasket, thermostat cover	1	1	1
7	359945	Shaft, impeller	1	1	1
8	359946	Cover, thermostat	1	1	1
9	359947	Cover, pump	1	1	1
10	359948	Hose, cooling	1	1	1
11	359949	Hose, cooling	1	1	1
12	359950	Hose, cooling	1	1	1
13	359951	Reservoir	1	1	1
14	359952	Water pump (generator set serial numbers before 758309)	1		
14	GM29876	Water pump (engine model ES04; generator set serial numbers 758309 and after)	1		
14	GM29876	Water pump		1	1
15	359953	Mechanical seal	1	1	1
16	359954	Spur gear (generator set serial numbers before 758309)	1		
16	GM29877	Spur gear (engine model ES04; generator set serial numbers 758309 and after)	1		

Item	Part No.	Description	Qty.		
			1	2	3
16	GM29877	Spur gear	1	1	1
17	359955	Joint	1	1	1
18	359956	Impeller	1	1	1
19	359957	Pump case	1	1	1
20	359958	Nut	1	1	1
21	359959	Clamp	2	2	2
22	359960	Clamp	2	2	2
23	359961	Pin	1	1	1
24	359962	Seal, oil	1	1	1
25	359963	Ball	1	1	1
26	359964	Collar	2	2	2
27	359965	Clamp	2	2	2
28	359966	Clamp	2	2	2
29	359967	Tube	1	1	1
30	359968	Washer	1	1	1
31	359969	Bolt, flanged	2	2	2
32	359970	Bolt, flanged	2	2	2
33	359971	Bolt, flanged	3	3	3
34	359972	Bolt, flanged	1	1	1
35	359973	Bolt, flanged	3	3	3
36	359974	Bolt, flanged	1	1	1
37	359975	Pin, dowel	1	1	1
38	359976	O-ring	1	1	1
39	359977	O-ring	1	1	1
40	229353	Mount			2

## Group 101: Air Intake



Item	Part No.	Description	Qty.
			Var.
1	X-284-39	Grommet	4
2	M933-08025-60	Screw, hex head cap	4
3	X-6284-6	Screw, pan head machine	3
4	359294	Guard, flywheel	1
5	359339	Duct, air inlet	1
6	359340	Arrester, flame	1
7	359353	Gasket, air intake	1
8	359577	Insulation, acoustic foam*	1
9	359575	Duct, air intake*	1
10	359576	Cover, air intake*	1
11	229353	Mount	2
12	X-22-12	Washer, lock, .262 ID x .743 ID	2

\* Item is included in service kit GM11698.

See the table below for a list of generator set serial numbers for which installation of kit GM11698 Air Intake Duct will improve the engine air/fuel mixture ratio and decreases the air intake noise level.

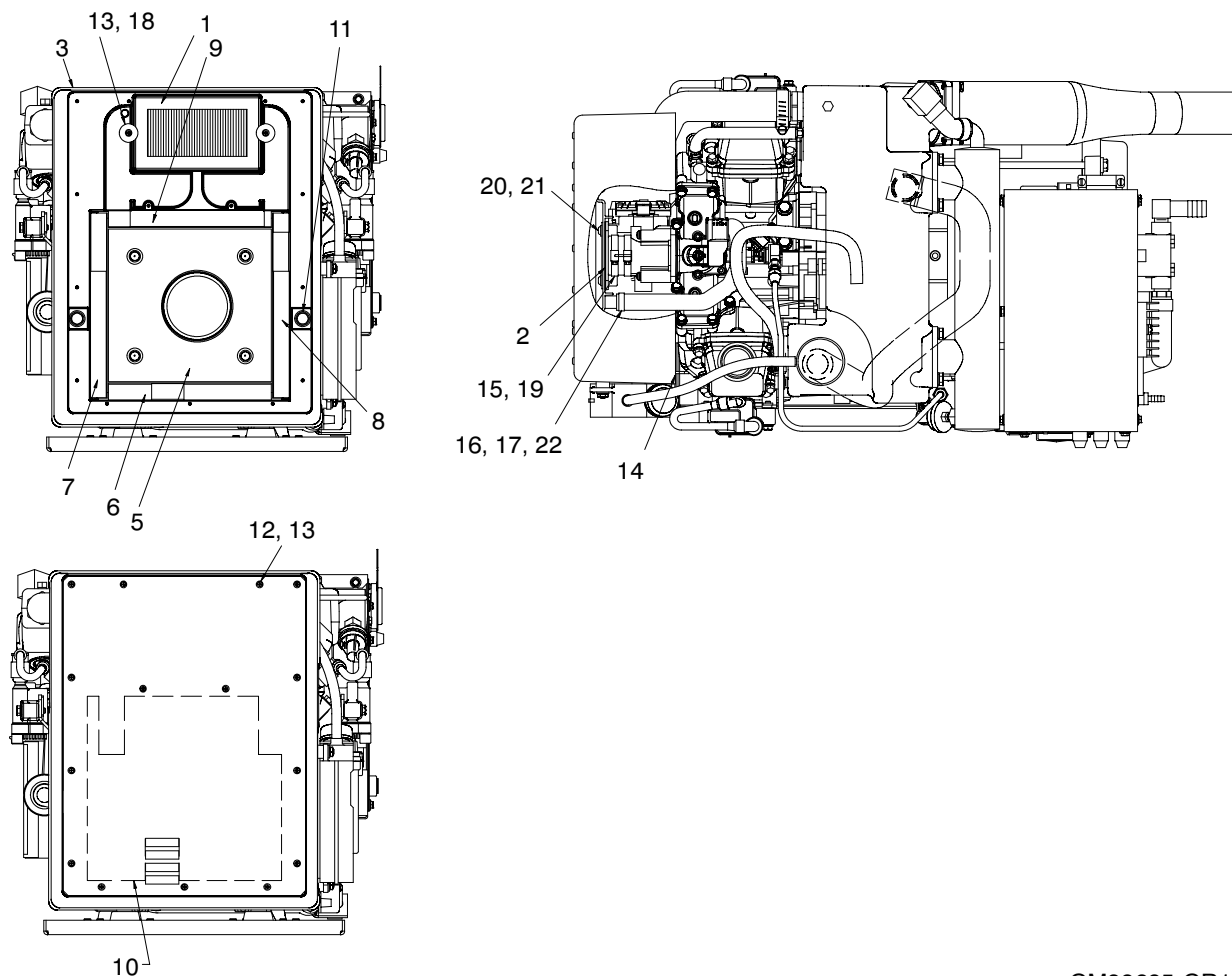
### Serial Numbers

**Note: A dash (-) indicates a range of serial numbers.**

0623502-0623506	0631425-0631503
0624407-0624410	0633287-0633291
0625632-0625646	0633302-0633387
0625691-0625693	0633389-0633441
0626132-0626135	0633452-0633458
0626821	0634787-0634803
0626826	0634805-0634916
0626827	0634918-0635001
0626829	0638222-0638226
0626831	0638230-0638232
0628165-0628172	0638234
0628194-0628197	0638236-0638249
0628199	0638251-0638259
0629268-0629292	0638261-0638310
0629328-0629335	0639032
0629337	484952
0629344-0629353	486106
0630437-0630461	



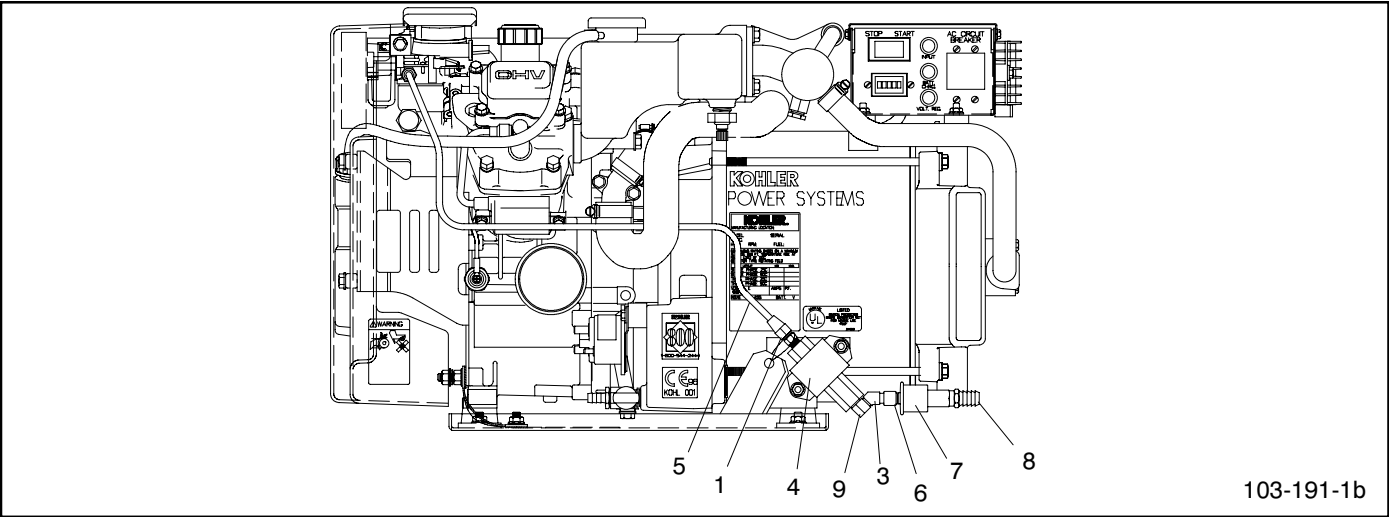
## Group 101: Air Intake, continued



GM39685-GR1

Item	Part No.	Description	Qty. Var. 2
1	GM24212	Arrestor, flame	1
2	GM39537	Gasket, air intake	1
3	GM23501	Duct, air intake	1
4	GM39521	Foam Kit, Acoustic (include items 5-10)	1
5	GM39522	Foam, acoustic	1
6	GM39523	Foam, acoustic	1
7	GM39524	Foam, acoustic	1
8	GM39525	Foam, acoustic	1
9	GM39526	Foam, acoustic	1
10	GM39527	Foam, acoustic	1
11	X-284-39	Grommet, round	2
12	GM23587	Panel, air intake	1
13	GM23496	Screw, thread forming	17
14	GM23588	Bracket, intake duct mounting	1
15	GM46331	Adapter, air intake	1
16	GM39739	Hose, molded breather	1
17	X-426-10	Clamp, hose, .5/1 in.	2
18	X-25-157	Washer	2
19	X-426-19	Clamp, hose, 1/2 in.	1
20	X-50-15	Screw, pan head 10-24 x 1/2	4
21	GM46328	Plate, air intake	1
22	X-309-11	Clamp, hose	1

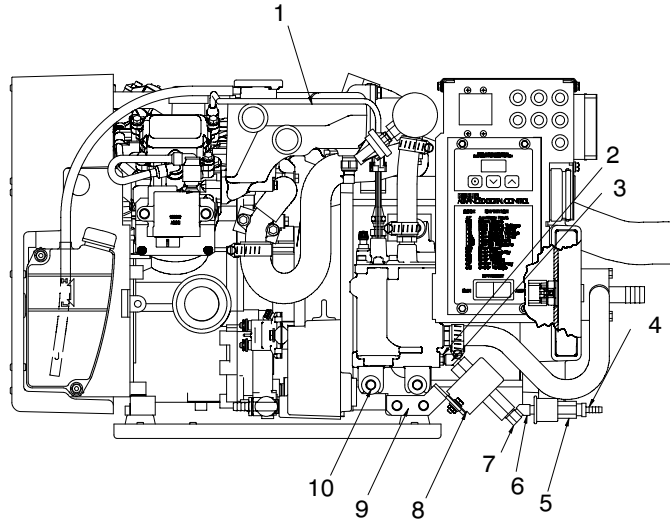
# Group 103: Fuel System



103-191-1b

Item	Part No.	Description	Qty.
			Var.
1	X-296-1	Connector, 7/16-20 x 1/8 in.	1
3	267428	Elbow, 45° street	1
4	278490	Pump, fuel	1
5	359338	Line, fuel	1
6	278470	Adapter, pipe	1
7	267987	Filter, fuel, 1/4 in. NPT	1
8	X-652-3	Fitting, hose	1
9	X-555-2	Elbow, street, 90° x 1/8 in.	1

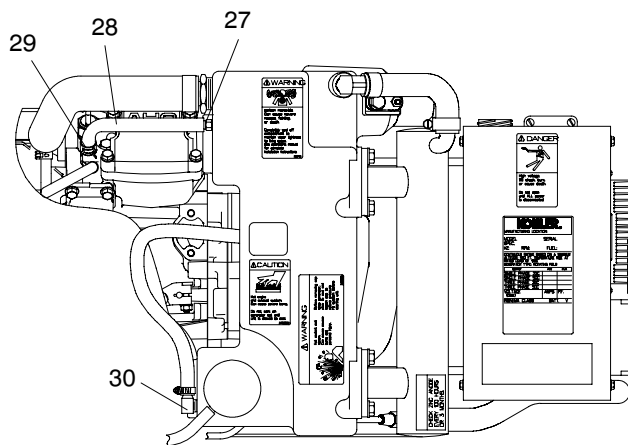
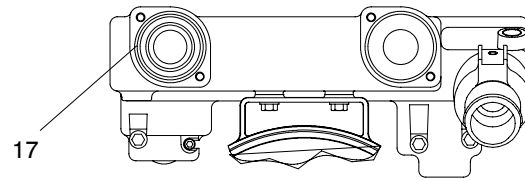
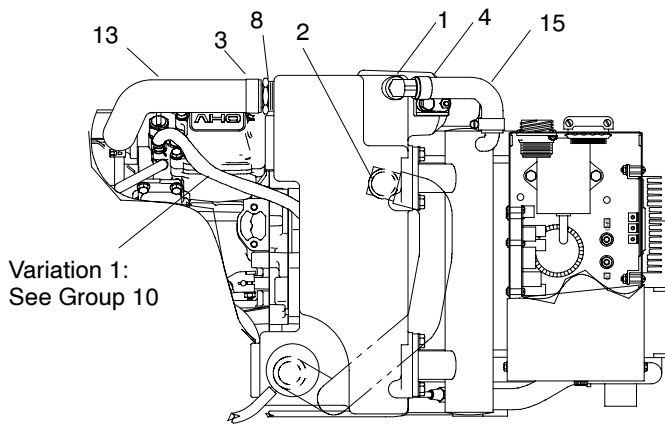
## Group 103: Fuel System, continued



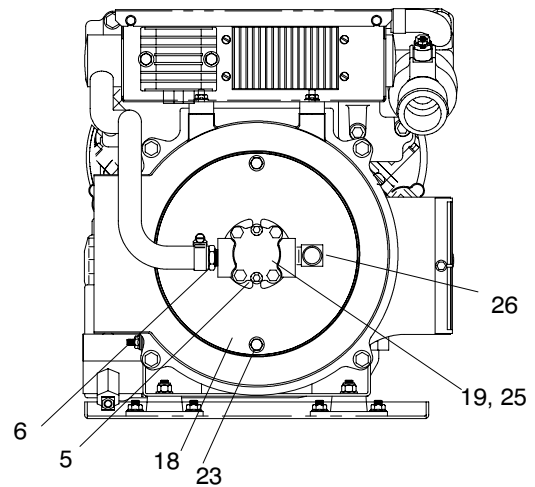
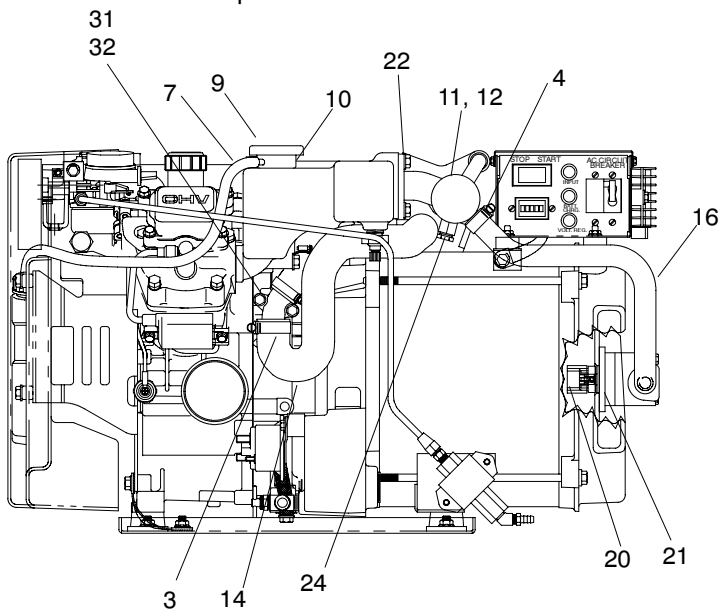
GM39685-GR2

Item	Part No.	Description	Qty.
			Var.
1	GM39671	Line, fuel	1
2	X-296-29	Fitting, half union	1
3	267428	Fitting, 45 deg. street elbow	1
4	X-652-3	Connector, hose + vibra seal	1
5	267987	Filter, fuel, 1/4 in. NPT	1
6	267428	Fitting, 45 deg. street elbow	1
7	X-555-2	Elbow, street (90 deg. x 1/8 in. NPTF)	1
8	278490	Pump, fuel	1
9	GM39858	Bracket, fuel line support	1
10	GM39595	Module, fuel pump	1

# Group 104: Cooling System



See Group 10  
for connector part number.

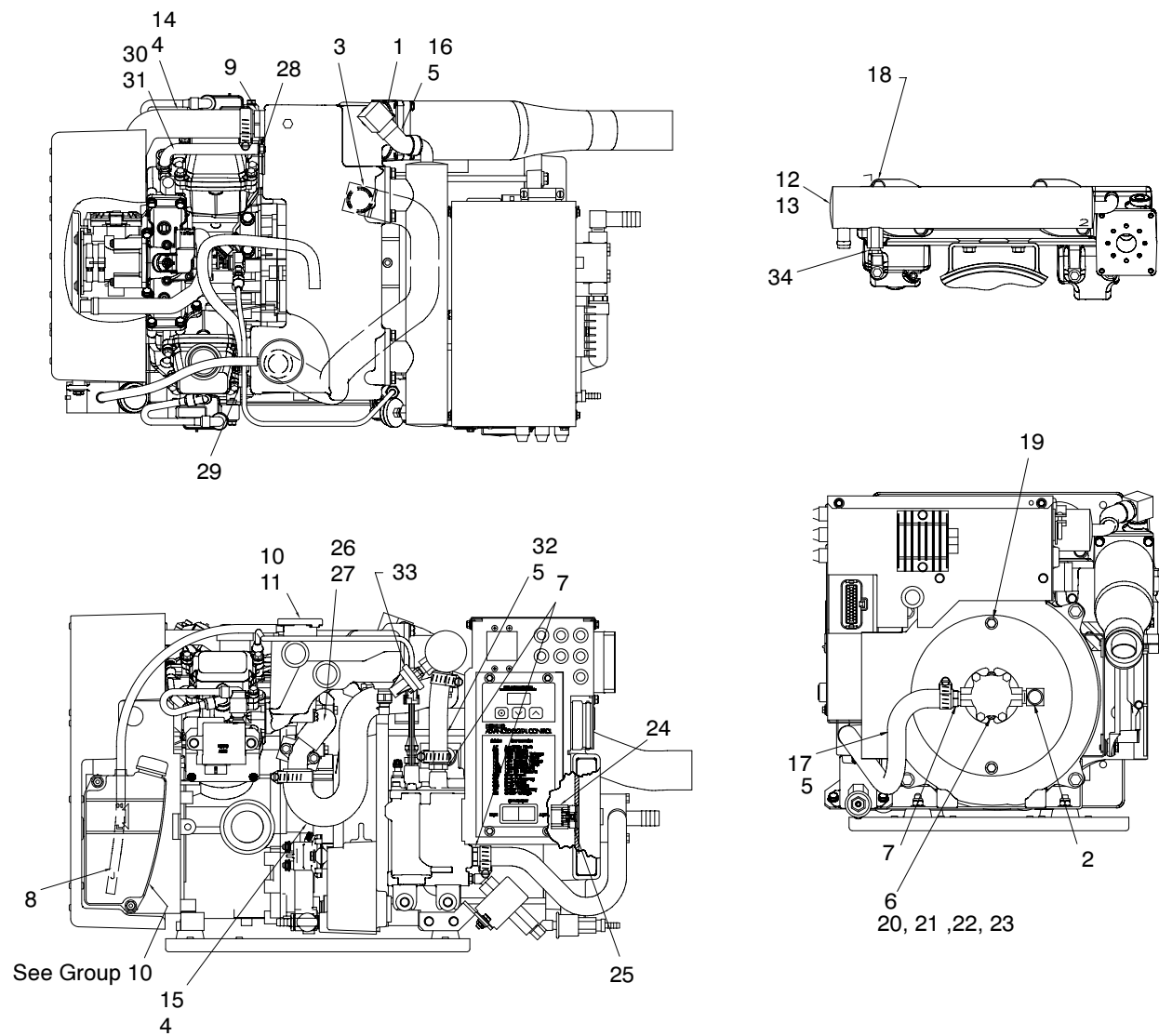


104-191-1b

## Group 104: Cooling System

Item	Part No.	Description	Qty. Var.	
			1	2
1	X-391-2	Connector, 90° hose, 5/8 in. ID hose	1	1
2	X-391-32	Elbow, hose (on bottom of exhaust manifold)	1	1
3	X-426-15	Clamp, hose	4	4
4	X-426-3	Clamp, hose, 1/2-1 13/32	4	4
5	X-55-47	Screw, hex head, 5/16-24 x 0.50	2	2
6	X-582-2	Connector, hose	1	1
7	X-6371-1	Hose, rubber	1	1
8	X-751-1	Adapter, hose, 1 in. x 1 in.	1	1
9	229980	Cap, manifold	1	1
10	241311	Neck (50 440 01)	1	1
11	254920	Thermostat (160 deg.)	1	
11	249930	Thermostat (195 deg.)	1	1
12	359301	Exchanger, heat	1	1
13	359305	Hose, molded coolant	1	1
14	359306	Hose, molded coolant	1	1
15	359307	Hose, molded seawater	1	1
16	359308	Hose, molded seawater	1	1
17	359319	O-ring	2	2
18	359324	Plate, seawater pump mounting	1	1
19	GM28487	Pump, seawater	1	1
20	359448	Sleeve, drive	1	1
21	359449	Fitting, end drive	1	1
22	X-125-3	Screw	4	4
23	X-465-16	Screw	2	2
24	260085	Zinc anode kit	1	1
25	359978	Impeller kit, seawater	1	1
25	GM20716	Cover, back	1	1
25	GM35379	Seal/seat assembly	1	1
26	X-391-43	Connector, 90° hose, 3/4 in. ID hose	1	1
27	X-380-5	Connector, hose		1
28	X-386-101	Line, flexible		1
29	X-426-9	Clamp, hose, .25/.70 in.		2
30	X-391-3	Connector, 90°, 5/16 in. ID hose		1
31	GM35002	Gasket, coolant bypass		1
32	GM35001	Plate, coolant bypass		1

## Group 104: Cooling System, continued

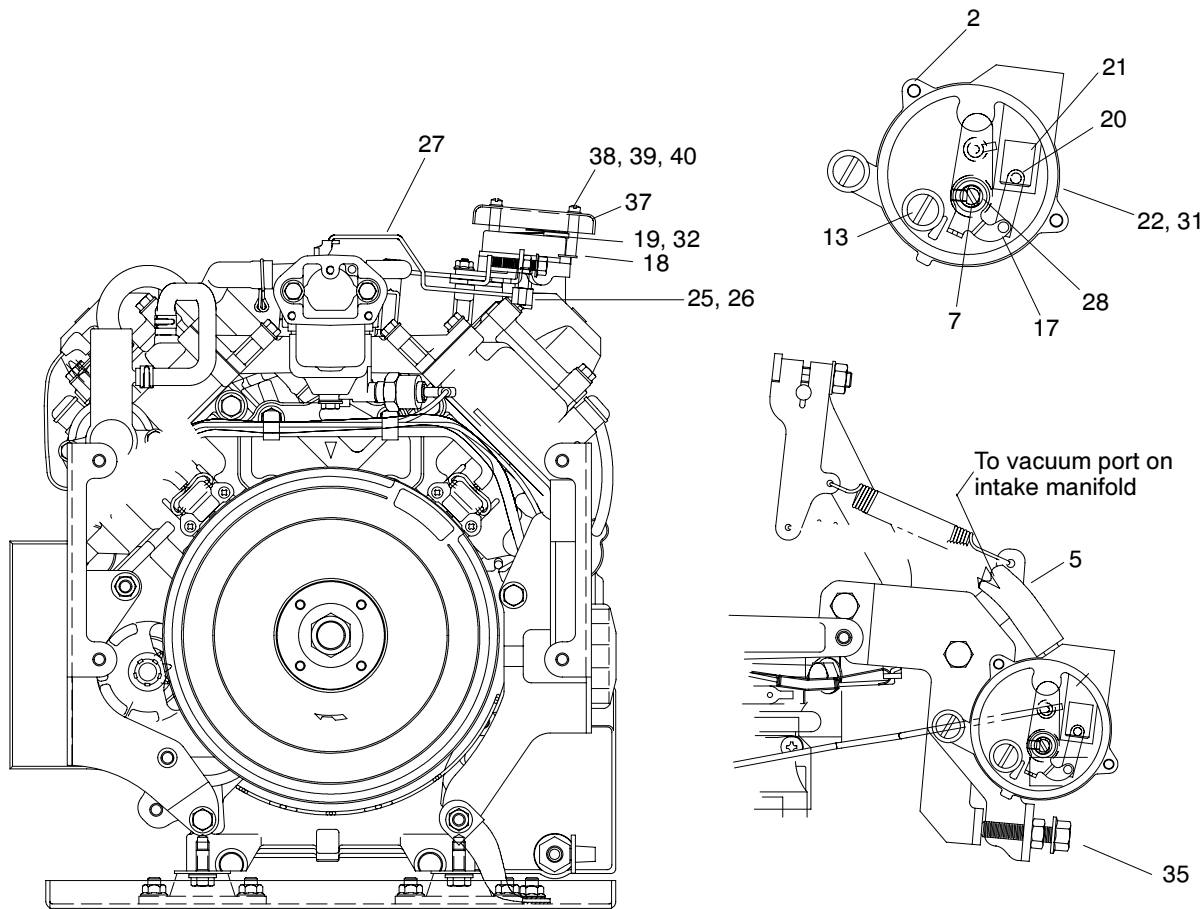


GM39685-GR3

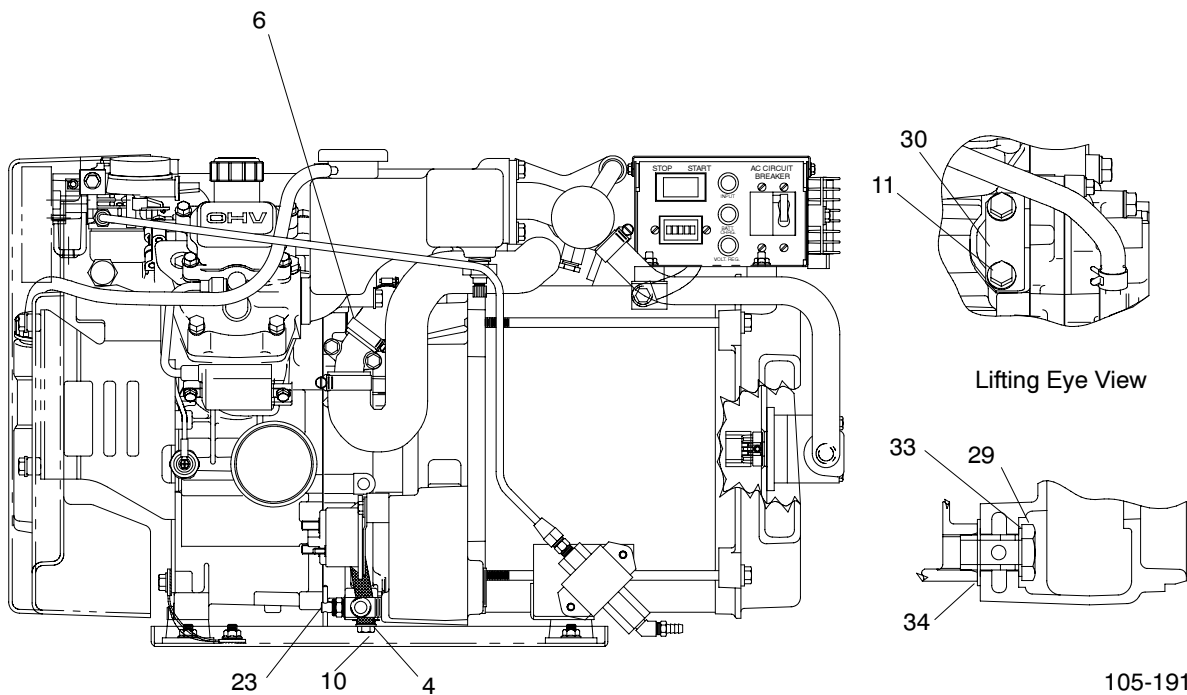
## Group 104: Cooling System, continued

Item	Part No.	Description	Qty.
			Var. 3
1	X-391-2	Connector, 90°, 5/8 in. ID hose	1
2	X-391-43	Connector, 90°, 3/4 in. ID hose	1
3	X-391-32	Connector, 90°, 1 in. ID hose	1
4	X-426-15	Clamp, hose, .75/1.5 in.	4
5	X-426-3	Clamp, hose, .56/1.06 in.	6
6	X-55-47	Screw, hex socket head machine	2
7	X-582-2	Connector, hose + vibra seal	3
8	X-6371-1	Hose, rubber	1
9	X-751-1	Connector, hose + vibra seal	1
10	229980	Cap, radiator 13-14 psi	1
11	241311	Filler neck	1
12	249930	Thermostat	1
13	GM39134	Exchanger, heat	1
14	359305	Hose, molded coolant, 1.00 in. ID	1
15	GM39871	Hose, molded coolant	1
16	X-312-45	Hose, .63 ID	1
17	GM39660	Hose, molded seawater	1
18	359319	O-ring, 60.0 mm ID	2
19	359324	Plate, seawater pump mounting	1
20	GM28487	Pump, seawater (includes items 21-23)	1
21	359978	Impeller kit	1
22	GM20716	Cover, back	1
23	GM35379	Seal, seat assembly	1
24	359448	Sleeve, drive, 1.14 in. OD	1
25	359449	Fitting, end drive	1
26	GM35001	Plate, coolant bypass	1
27	GM35002	Gasket, coolant bypass	1
28	X-380-5	Connector, hose + vibra seal	1
29	X-391-3	Connector, 90°, 5/16 in. ID hose	1
30	X-386-101	Fuel line, flexible	1
31	X-426-9	Clamp, hose, .25/.70 in.	2
32	X-312-41	Hose, .63 ID	1
33	GM30263	Switch, pressure assembly	1
34	260085	Kit, zinc anode	1

# Group 105: Engine



Choke Housing Assembly

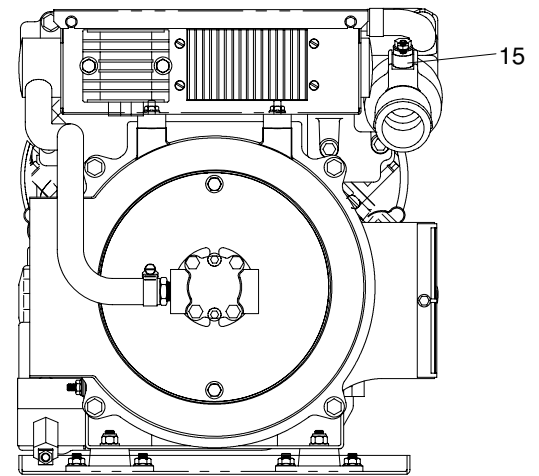
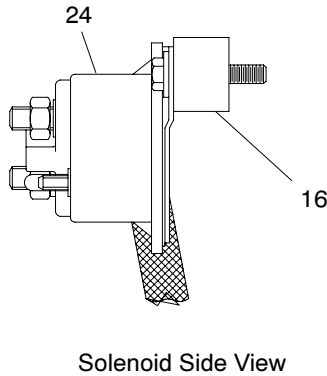
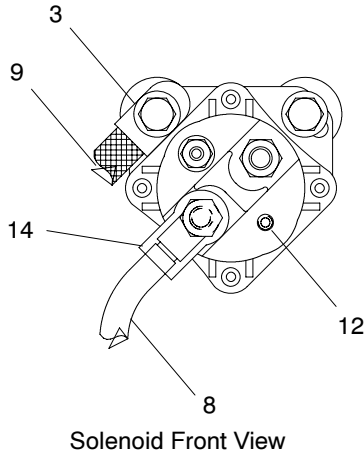


Lifting Eye View

105-191-1\_1a



# Group 105: Engine



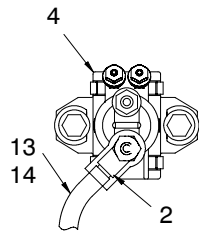
Item 36 is not shown.

105-191-1\_2

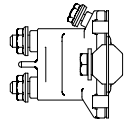
Item	Part No.	Description	Qty.		
			Var.		
			1	2	3
1	B-359285	Engine assembly (see Groups 1-9 for parts)	1	1	
1	C-359285	Engine assembly (see Groups 1-9 for parts)			1
2	X-14-6	Screw, FHM, 8-32 x 0.25	2	2	2
3	X-22-12	Washer, lock, 1/4 in. interior-exterior tooth	1	1	1
4	X-22-16	Washer, lock, 5/16 in. interior-exterior tooth	1	1	1
5	X-386-14	Line, flexible fuel, 1/4 in. x 9 in.	1	1	1
6	X-426-20	Clamp, hose	2	2	2
7	X-49-25	Screw, PHM., 6-32 x 0.25 in. slot	1	1	
7	X-49-1	Screw, PHM., 6-32 x 5/16			1
8	X-545-25	Cable, battery	1	1	1
9	X-6046-3	Strap, ground	1	1	1
10	M933-08016-60	Screw, hex head cap	1	1	1
11	M933-08016-60	Screw, hex head cap	2	2	2
12	X-6214-2	Cap, plastic	1	1	1
13	X-6284-1	Screw, pan head metric	2	2	2
14	238915	Boot	1	1	1
15	249872	Switch, high temperature cutout	1	1	1
16	259632	Bumper	2	2	2
17	277272	Lever assembly, choke	1	1	1
18	277275	Retainer, thermostat coil	2	2	2
19	277281	Gasket	1	1	1
20	277285	Pin	1	1	1
21	277288	Piston, choke	1	1	1
22	277297	Plate, baffle	1	1	1
23	359653	Valve, shutoff	1	1	1
24	291891	Solenoid, starter	1	1	1
25	358358	Coupling, stepper motor	1	1	1
26	25 158 08	Bushing	1	1	1
27	359311	Linkage, choke	1	1	1
28	359312	Shaft, choke	1	1	1
29	359333	Bolt, banjo	1	1	1
30	359354	Strap, lifting	1	1	1
31	52 081 05	Housing assembly, choke	1	1	1
32	359356	Heater assembly, choke*	1	1	1
33	359421	Washer, pressure sealing	1	1	1
34	359422	Washer, pressure sealing	1	1	1
35	359821	Bolt, M5 x 30	1	1	1
36	X-6003-107	Conduit (not shown)		1	1
37	GM29564	Cover, choke			1
38	X-400-255	Spacer			2
39	X-51-41	Screw, pan head, 8-32 x 1 3/4			2
40	X-25-48	Washer, plain, .188 ID x .438 in. OD			2

\*Choke Repair Assembly GM12236 includes items 2, 7, 17-22, 25-28, 31, 32

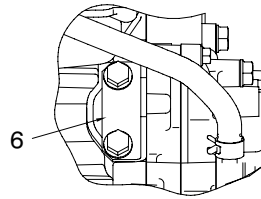
# Group 105: Engine, continued



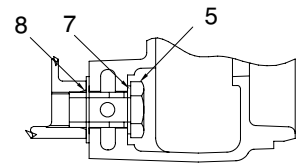
Solenoid Front View



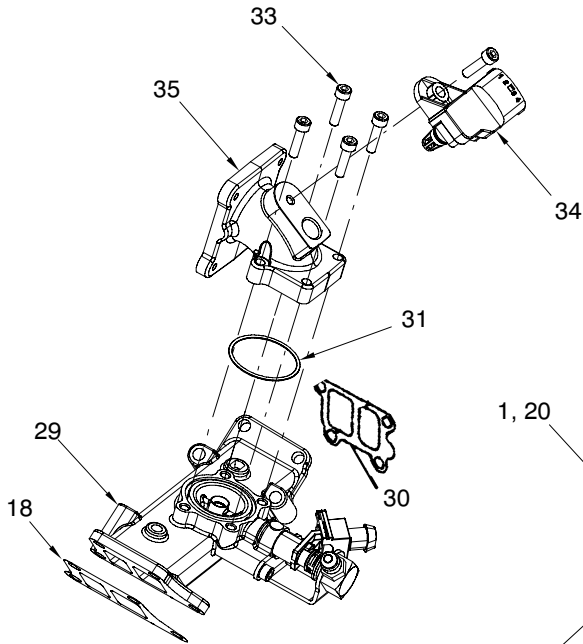
Solenoid Side View



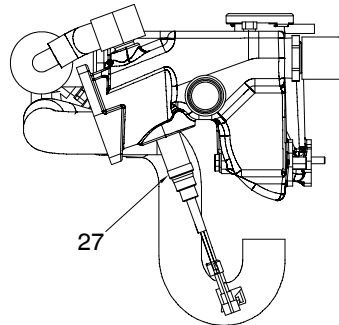
Lifting Eye View



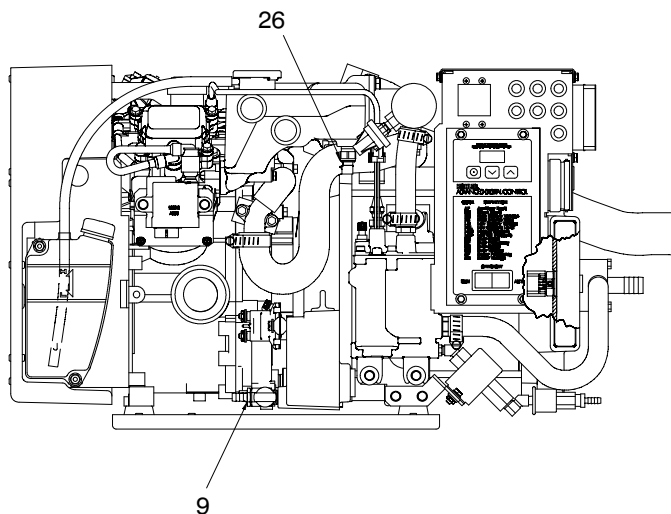
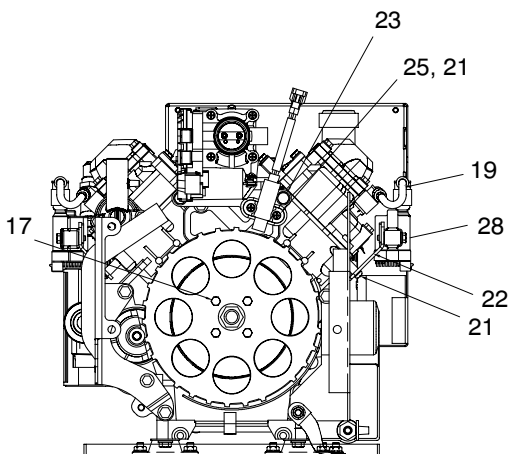
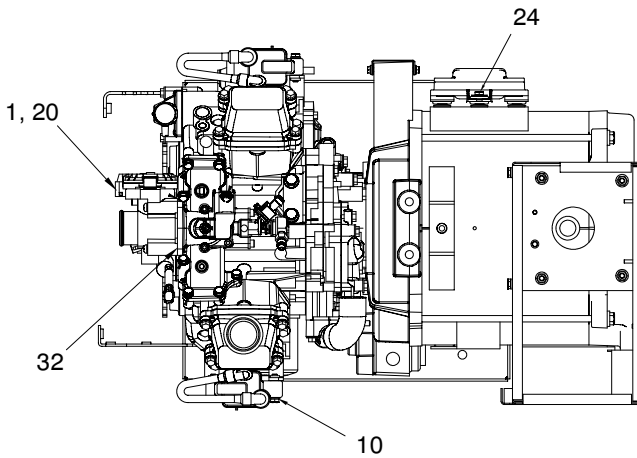
Oil Drain Connection



Air Intake Assembly



Oxygen Sensor Assembly



GM39685-GR4

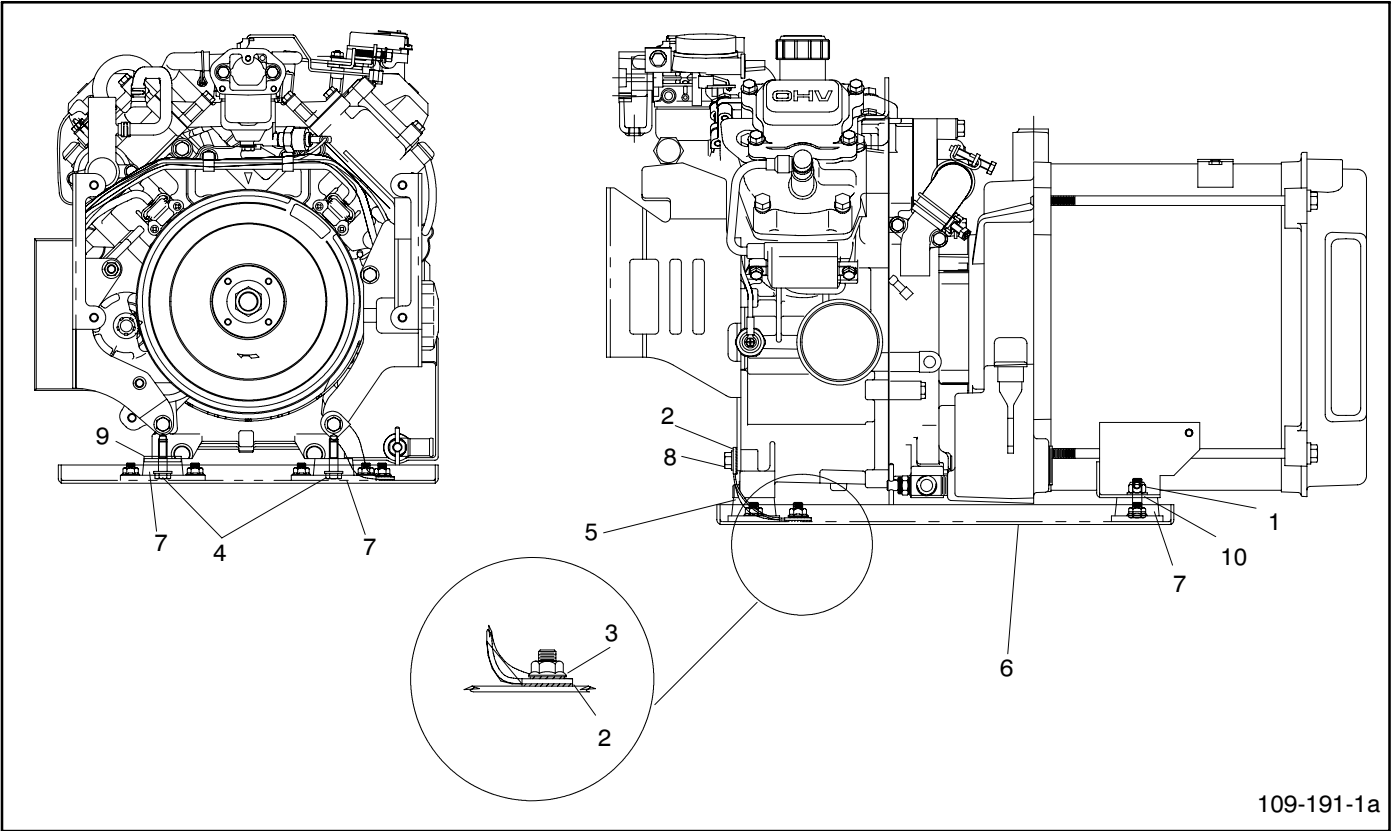
## Group 105: Engine, continued

Item	Part No.	Description	Quantity	
			Variation	
			4	5
1	GM39605	Governor, 32 mm electronic air	1	1
2	238915	Boot	2	2
4	GM45936	Starter solenoid	1	1
5	359333	Bolt, M16-1.5 x 1.10 in.	1	1
6	359354	Bracket, lifting eye	1	1
7	359421	Washer, sealing, 30.3 mm OD	1	1
8	359422	Washer, sealing, 30.1 mm OD	1	1
9	359653	Valve, oil drain, 3/8-18 NPT	1	1
10	C-359285	Engine assembly	1	1
13	X-545-25	Cable, battery (No. 6 x 18 in.) red+	1	1
14	X-6003-107	Conduit	1	1
17	GM39570	Wheel, encoder	1	1
18	359844	Gasket, intake manifold	1	1
19	GM39902	Wire, spark plug	2	2
20	M7985A-05045-20	Screw, pan head machine	4	4
21	M7985A-05016-20	Screw, pan head machine	6	6
22	GM39597	Bracket, ignition coil	2	2
23	GM39598	Bracket, crank position sensor	1	1
24	GM46910	Controller, 60 Hz SECM	1	
24	GM47252	Controller, 50 Hz SECM		1
25	GM39600	Sensor, crankshaft position	1	1
26	GM39601	Sensor, coolant temperature	1	1
27	GM39602	Sensor, heated O2	1	1
28	GM39603	Coil, ignition	2	2
29	GM39606	Assembly, air intake (includes item 35)	1	1
30	359845	Gasket, intake manifold	1	1
31	GM41974	O-ring	1	1
32	GM42275	O-ring	1	1
33	M912-05020-60	Socket, head cap screw	4	4
34	GM39604	Sensor, TMAP	1	1
35	GM41940	Elbow, manifold	1	1

## Group 107: Nameplate and Decals

Item	Part No.	Description	Qty. Var.			
			1	3	4	5
1	X-6348-6	Decal, Kohler Power Systems	1	1		
2	X-6246-9	Decal, Kohler Power System			1	1
2	224233	Decal, 1-800 number	1	1	1	1
3	229831	Decal, reconnection	1	1		
3	GM35838	Decal, reconnection			1	1
4	238162	Decal, positive battery connection	1	1		
4	GM46200	Decal, positive battery connection			1	1
5	239796	Decal, warning carbon monoxide	1	1	1	1
6	249808	Decal, warning rotating parts	1	1	1	1
7	249809	Decal, warning hot engine and exhaust	1	1	1	1
8	249810	Decal, warning hot coolant and steam	1	1	1	1
9	294520	Decal, danger high voltage	1	1	1	1
10	344282	Decal, check zinc anode	1	1	1	1
11	GM14167	Decal, drain	1	1	1	1
12	344295	Decal, equipment ground	1	1	1	1
13	359282	Tag, hang notice 1/4 in. ID fuel line required	1	1	1	1
14	241812	Decal, UL				
15	249494	Decal, warning explosion	1	1	1	1
16	344588	Decal, CE		1		
17	226917	Decal, negative battery connection	1	1	1	1
18	GM42444	Decal, emissions			1	
19	GM40035	Decal, fuse panel			1	1
20	GM48037	Decal, notice replace CO sensor (generator sets with serial number 2085259 and above)			1	1

# Group 109: Skid and Plant Mounting

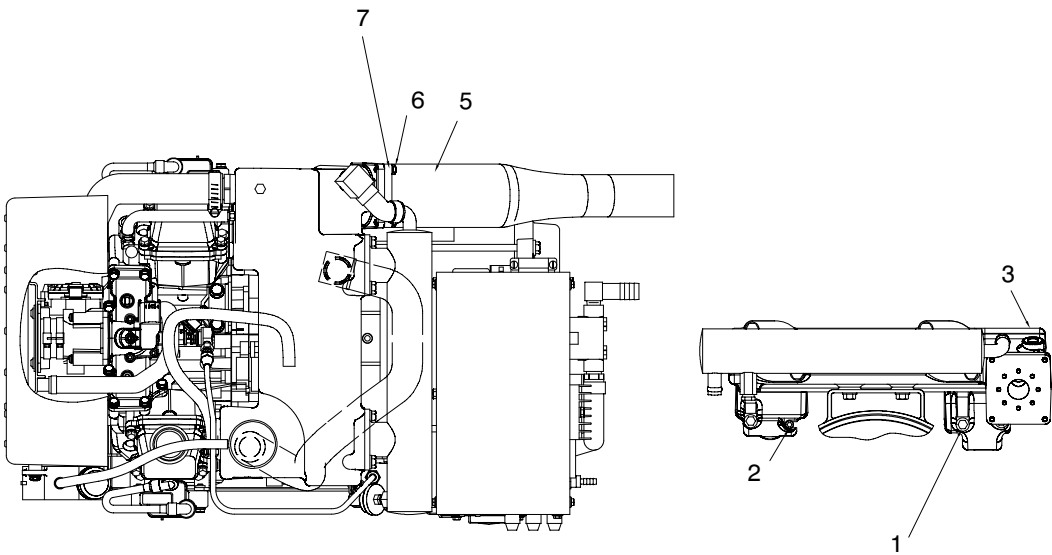
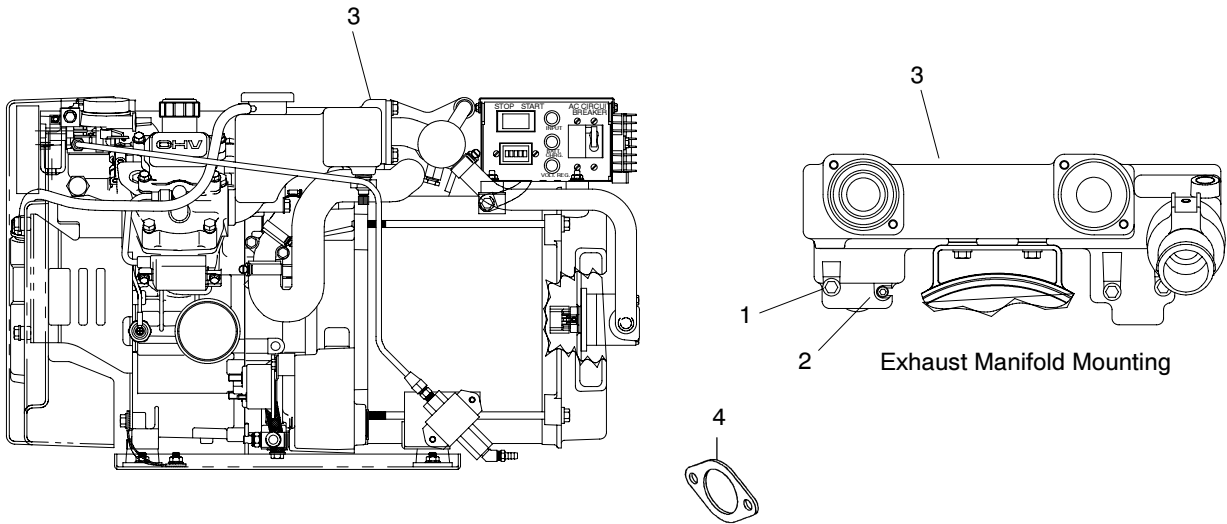


Item	Part No.	Description	Qty.
			Var. 1
1	X-101-16	Nut, elastic stop, 5/16-18 in.	2
2	X-22-16	Washer, lock, 5/16 in. interior-exterior tooth	2
3	X-22-5	Washer, lock, 5/16 in. interior tooth	1
4	M933-08016-60	Screw, hex head cap	2
5	245297	Strap, ground	1
6	359325	Tray, drip	1
7	GM28419	Kit, vibromount*	1
8	X-6054-17	Stud	1
9	X-25-164	Washer, plain	2
10	X-25-85	Washer, plain	2

\* Vibromount kit GM28419 includes:

1	X-101-16	Nut, elastic stop, 5/16-18 in.	2
4	M933-08016-60	Screw, hex head cap	2
9	X-25-164	Washer, plain	2
10	X-25-85	Washer, plain	2
—	GM31230	Mount, vibromount	4
—	X-125-3	Bolt, hex cap, 5/16-18 x 0.75 in. (not shown)	2
—	X-6210-7	Nut, flange spirallock, 5/16-18 in. (not shown)	8
—	M125A-08-80	Washer, plain #8 (not shown)	2
—	TT-1350	Instructions, mounting/installation	1

# Group 116: Exhaust

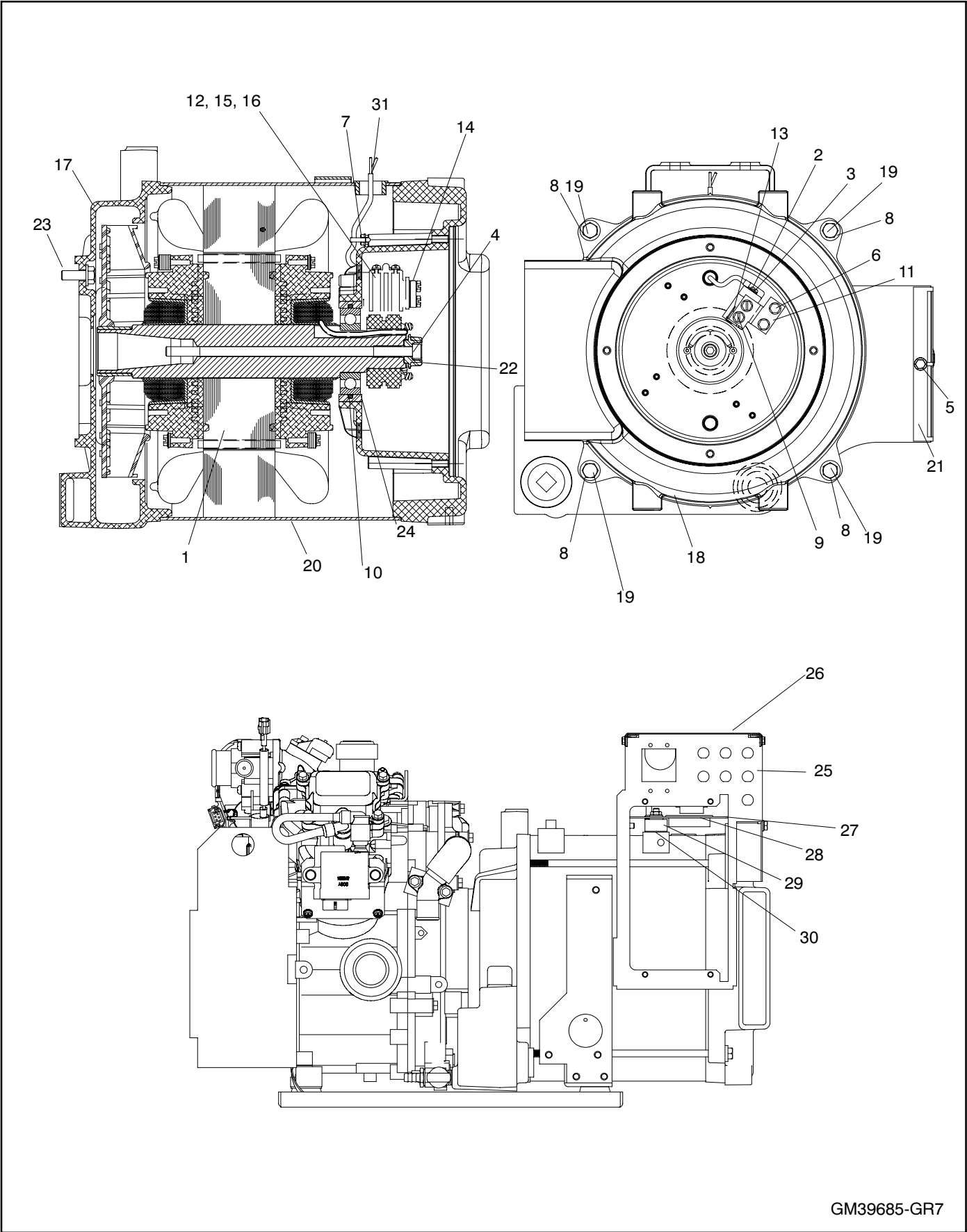


GM39685-GR9

## Group 116: Exhaust

Item	Part No.	Description	Qty. Var.		
			1	2	3
1	M931-06075-60	Screw, HC	3	3	3
2	254765	Screw, socket hex cap	1	1	1
3	GM10105	Manifold, exhaust	1		
3	GM35003	Manifold, exhaust		1	
3	GM39129	Manifold, exhaust			1
4	359897	Gasket	2	2	2
5	GM39607	Catalyst assembly			1
6	GM40060	O-ring, 37.77 mm ID			1
7	GM40061	O-ring, 61.6 mm ID			1

# Group 201: Generator and Mounting



GM39685-GR7

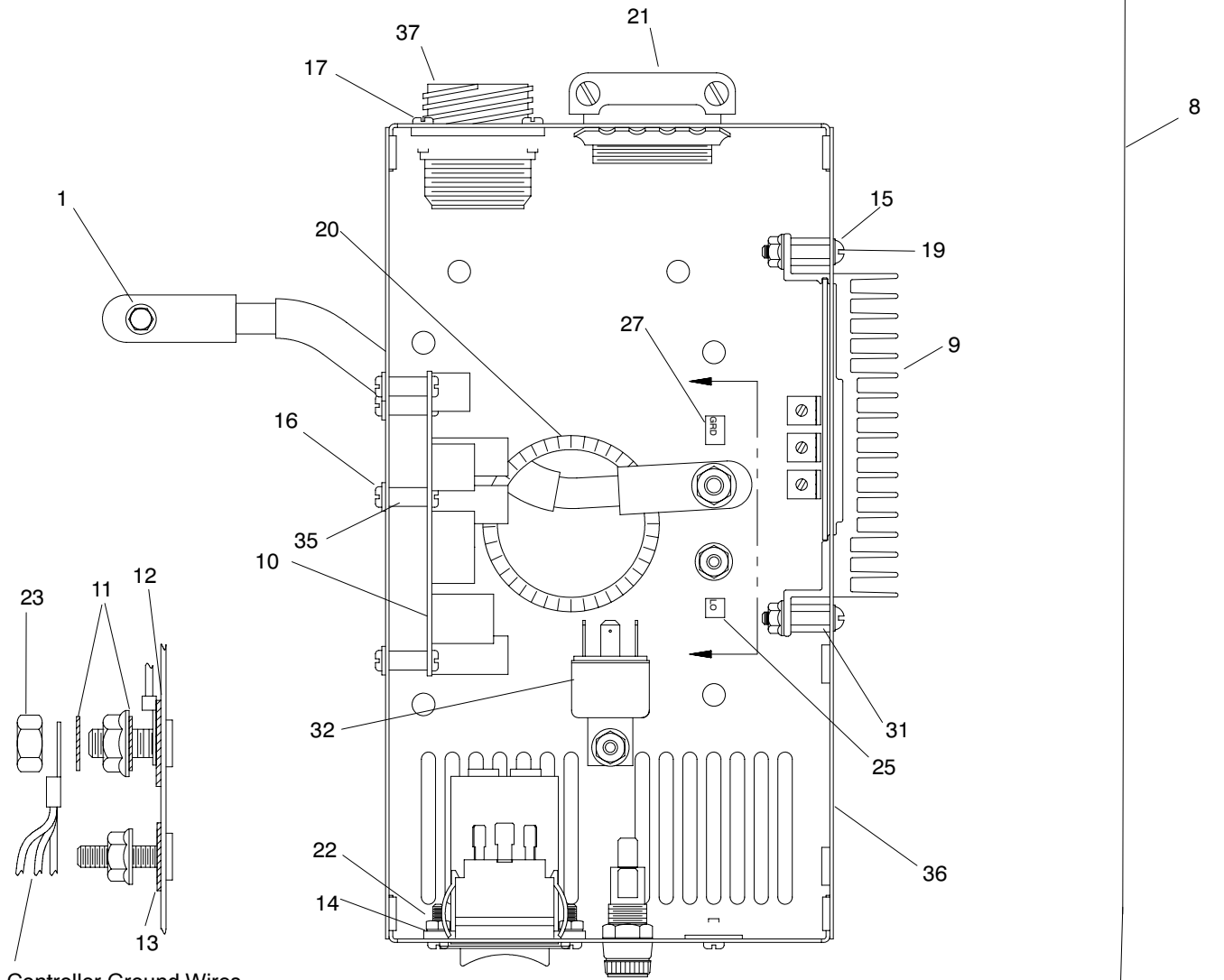
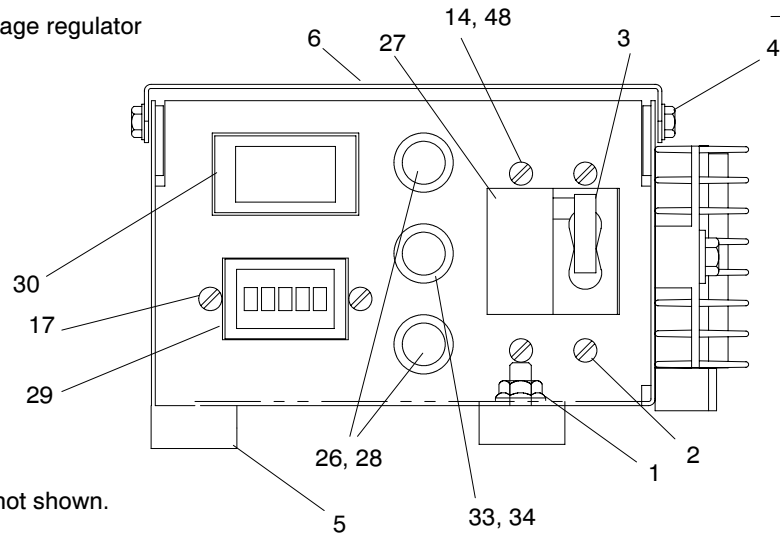


## Group 201: Generator and Mounting

Item	Part No.	Description	Qty. Var.	
			1	2
1	A-359441	Rotor assembly (includes item 24)	1	1
2	X-22-6	Washer, lock #6 int. star	2	2
3	X-49-1	Screw, RHM, 6-32 x .312 slot	2	2
4	X-55-48	Screw, hex head, 5/16-24	1	1
5	X-6216-1	Screw, hex head	2	2
6	X-67-113	Screw, self-tapping	2	2
7	X-67-52	Screw, self-tapping	1	1
8	X-801-4	Washer, hardened	4	4
9	X-67-64	Screw, self-tapping	2	2
10	229110	O-ring	1	1
11	GM41969	Bracket, brush holder	1	1
12	238150	Spring	2	2
13	238247	Retainer, wire	1	1
14	238248	Shim, brush holder	2	2
15	239247	Holder, brush	1	1
16	239282	Brush	2	2
17	359292	Adapter, generator	1	1
18	GM11876	Bracket, end	1	1
19	359310	Overbolt	4	4
20	359327	Stator assembly	1	
20	GM39039	Stator assembly		1
21	359403	Guard, fan	1	1
22	359453	Fitting, end drive	1	1
23	X-125-30	Screw	4	4
24	X-758-15	Bearing, ball	1	1
25	GM39040	Box, junction		1
26	GM39041	Cover, junction box		1
27	GM39042	Bracket, junction box mounting		1
28	X-634-18	Bushing		1
29	241769	Mount, controller		4
30	X-22-12	Washer, lock, .262 ID x .743 in. OD		4
31	GM45945	Harness, wiring, brush connection		1

# Group 301: Controller and Mounting

See Group 5 for voltage regulator



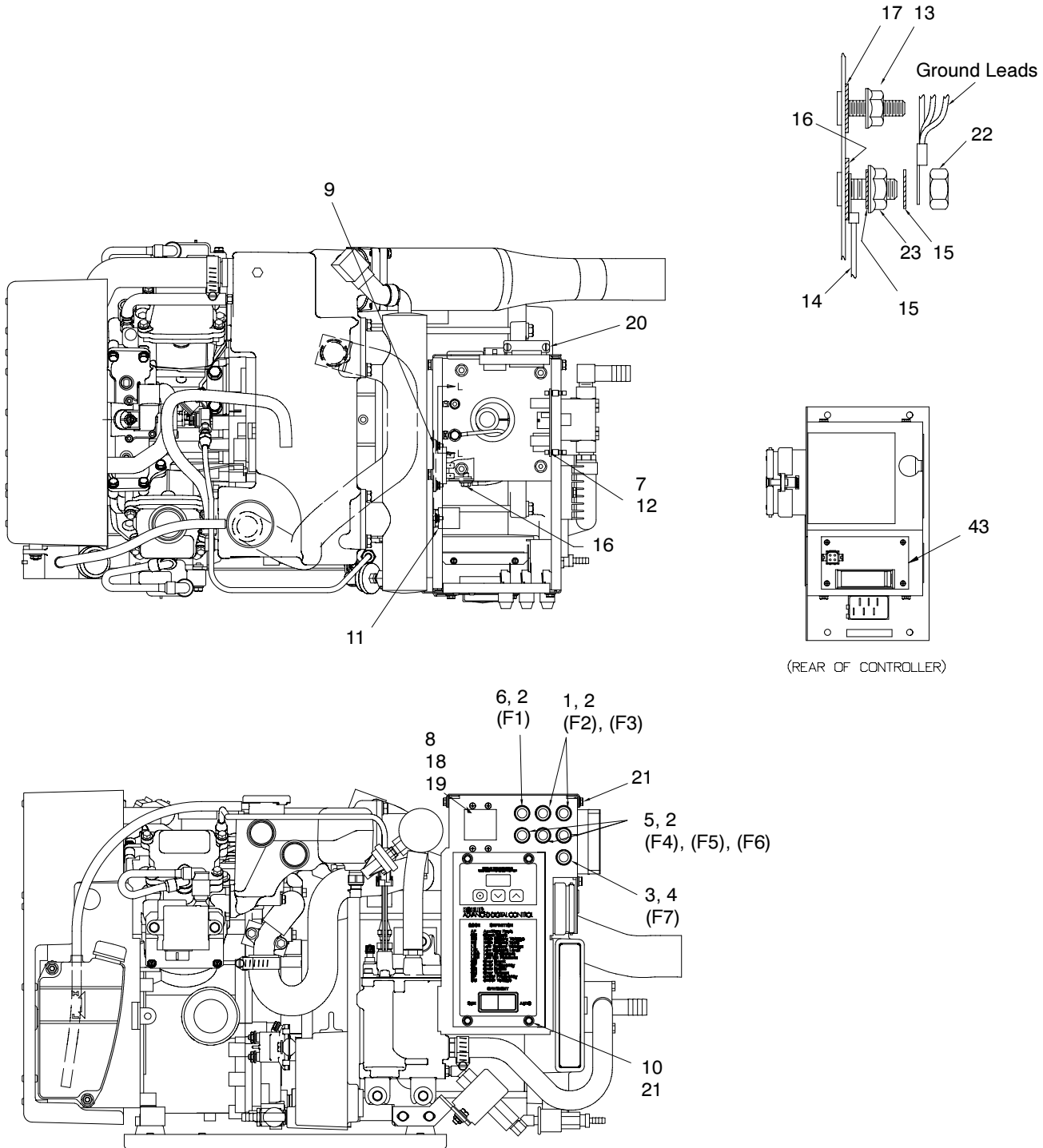
A359337a

# Group 301: Controller and Mounting

Item	Part No.	Description	Quantity				
			Variation				
			1	2	3	4	7
1	X-22-12	Washer, lock, 1/4 in. interior-exterior tooth	5	5	5	5	5
2	X-49-21	Screw, RHM, 6-32-3/16	2	2	2	2	
3	X-506-51	Breaker, circuit	1				
3	X-506-58	Breaker, circuit		1			
3	X-506-60	Breaker, circuit			1		
3	X-506-68	Breaker, circuit				1	
3	—	Breaker, circuit (see accessories)					1
4	X-67-52	Screw, hex head 10-24	4	4	4	4	4
5	241769	Mount, controller	4	4	4	4	4
6	359336	Cover, controller	1	1	1	1	1
7	359344	Harness, engine wiring (includes items 38-41)	1	1	1	1	1
8	B-359337	Controller assembly (includes items 9-48)	1	1	1	1	1
9	G-278598	PCB assembly (PBIIE)	1	1	1	1	1
10	GM10516	PCB assembly	1	1	1	1	1
11	X-22-11	Washer, lock, 1/4 in. interior tooth	2	2	2	2	2
12	X-22-12	Washer, lock, 1/4 in. interior-exterior tooth	1	1	1	1	1
13	X-22-13	Washer, lock, #10, interior-exterior tooth	1	1	1	1	1
14	X-22-6	Washer, lock, #6, interior	6	6	6	6	6
15	X-22-7	Washer, lock, #8, interior tooth	4	4	4	4	4
16	X-49-25	Screw, PHM., 6-32 x 0.25 slot	10	10	10	10	10
17	X-49-26	Screw, PHM., 6-32 x 0.50 slot	6	6	6	6	6
18	X-67-133	Screw, hex washer, thread-forming	4	4	4	4	4
19	X-51-5	Screw, RHM, 8-32 x 7/16	4	4	4	4	4
20	X-634-18	Bushing	1	1	1	1	1
21	X-6266-1	Connector, cable	1	1	1	1	1
22	X-71-2	Nut, hex, 6-32 zinc	2	2	2	2	2
23	X-81-8	Nut, hex, 1/4-20 green	1	1	1	1	1
24	201620-152	Tab, ID "grd in.	1	1	1	1	1
25	201620-94	Tab, ident	1	1	1	1	1
26	223316	Fuse, 10 A, 250 V	2	2	2	2	2
27	245264-BLK	Plate, cover	1	1	1	1	1
28	238426	Holder, fuse, 0.25 x 1.25	2	2	2	2	2
29	238736	Hourmeter	1	1	1	1	1
30	249406	Switch, rocker, 1 pole	1	1	1	1	1
31	249986	Spacer	4	4	4	4	4
32	259391	Relay, SPDT 30A, 12V coil sealed	1	1	1	1	1
33	262389	Fuse, 25A, 125 V	1	1	1	1	1
34	263156	Holder, fuse	1	1	1	1	1
35	GM10530	Spacer	5	5	5	5	5
36	359335	Box, silkscreened	1	1	1	1	1
37	GM30675	Harness, controller (includes items 42-47)	1	1	1	1	1
38	239493	Connector plug, 22-position	1	1	1	1	1
39	292370	Connector plug, 2-position	1	1	1	1	1
40	233959	Diode, 6 A, 100 V	1	1	1	1	1
41	359404	Connector, receptacle	1	1	1	1	1
42	239496	Connector panel, 22-position	1	1	1	1	1
43	241616	Connector plug, 6-position	1	1	1	1	1
44	259689	Connector plug, 9-position	1	1	1	1	1
45	269366	Connector plug, 15-position	1	1	1	1	1
46	239411	Connector plug, 4-position	1	1	1	1	1
47	233959	Diode, 6 A, 100 V	1	1	1	1	1
48	X-49-1	Screw, slotted pan head machine	4	4	4	4	4
49	X-6003-121	Conduit, convoluted (not shown)					1

# Group 301: Controller and Mounting, continued

See Group 5 for voltage regulator.  
Items 24-42 (harness) are not shown.



GM39685-GR8

## Group 301: Controller and Mounting

Item	Part No.	Description	Qty. Var. 8
1	223316	Fuse, 10 A, 250 V (F2, F3)	2
2	238426	Fuse holder, .25 x 1.25 in.	6
3	262389	Fuse, 25 A, 125 V (F7)	1
4	263156	Fuse holder	1
5	283645	Fuse, 15 A, 250 V (F4, F5, F6)	3
6	358337	Fuse, 10 A, 250 V (F1)	1
7	360459	Standoff, circuit board	4
8	245264-BLK	Plate, cover	1
9	GM28483	SCR module	1
10	GM48030	Service kit, ADC 2100 controller (with upgrade to CO sensor module) (generator serial number 2085258 and below, see note)	1
10	GM48031	Controller assembly, ADC 2100 (generator serial number 2085259 and above)	1
11	GM28787	Relay, SPDT 30A, 12V coil sealed	1
12	GM29671	PCB assy., relay board 12V	1
13	X-6210-1	Nut	1
14	LK-1010-1515	Lead	1
15	X-22-11	Washer, lock, .262 ID x .469 OD	2
16	X-22-12	Washer, lock, .262 ID x .743 in. OD	4
17	X-22-13	Washer, lock, .20 ID x .595 in. OD	1
18	X-22-6	Washer, lock, .146 ID x .285 in. OD	4
19	X-49-1	Screw, pan head 6-32 x 5/16	4
20	X-6266-1	Connector, cable	1
21	X-67-64	Screw, self-tapping	8
22	X-81-8	Nut, hex, 1/4-20	1
23	X-6210-2	Nut	1
24	GM39835	Harness, engine (includes items 25-42)	1
25	229989	Connector, receptacle	1
26	233959	Diode, 6 A	2
27	292370	Connector, plug, 2-position	1
28	320711	Connector, 9-position	1
29	GM13697	Connector, weathertight, 2-position	1
30	GM28678	Connector, weathertight	1
31	GM29998	Connector, 6-position, blk, male	1
32	GM36156	Connector 6-position	1
33	GM36161	Connector, 4-position	1
34	GM36163	Connector, 2-position	1
35	GM39876	Connector, 24-position	1
36	GM39881	Connector, 5-position	2
37	GM39888	Connector, 6-position	1
38	GM39889	Connector, 4-position	1
39	GM39893	Connector, 2-position	1
40	GM39895	Connector, 2-position	1
41	GM39900	Connector, 2-position	1
42	GM45941	Connector, 10-position	1
43	GM46362	PCB assy., CO sensor (generator sets with serial number 2085259 and above)	1

Note: Service Kit GM48030 upgrades serial numbers 2085258 and below with a CO sensor module. The GM48030 includes the ADC 2100 controller, CO sensor harness GM48032, and CO sensor (item 43). Serial numbers 2085259 and above were factory-shipped with the ADC2100 controller and CO sensor. Service serial numbers 2085259 and above with the GM48031 ADC 2100 controller assembly.

## Group 701: Literature

Item	Part No.	Description	Qty. Var.			
			1	2	4	5
1	TP-5982	Installation Manual, Gasoline Marine	1	1	1	1
2	TP-5985	Operation Manual, 5/7.3E and 4/6EF	1	1		
2	TP-6390	Operation Manual, 5/7.3ECD			1	1
3	TP-5986	Service Manual, 5/7.3E and 4/6EF	1	1		
3	TP-6391	Service Manual, 5/7.3ECD			1	1
4	TP-5987	Parts Catalog, 4-6EF/5-7.3E	1	1	1	1
5	TP-6001	Operation Manual, Kawasaki FD501D	1	1	1	1
6	TP-6002	Service Manual, Kawasaki FD501D	1	1	1	1
7	TP-6008	Service Manual Supplement, Kawasaki FD501D	1	1	1	1
8	TP-5375	Warranty, Marine	1	1	1	1
9	TP-5620	Safety Precautions, Marine	1	1	1	1

# Accessories

Qty.	Description	Part No.
<b>Circuit Breaker Kits</b>		
<b>Circuit Breaker PA-225640</b>		
1	Instructions, installation	TT-875
4	Screw, RHM, 6-32-3/16	X-49-21
1	Breaker, circuit, 40 A	X-506-50
1	Plate, cover	229183
1	Decal, notice	246242
<b>Circuit Breaker PA-225641</b>		
1	Instructions, installation	TT-875
4	Screw, RHM, 6-32-3/16	X-49-21
1	Breaker, circuit, 60 A	X-506-51
1	Plate, cover	229183
1	Decal, notice	246242
<b>Circuit Breaker PA-229185</b>		
1	Instructions, installation	TT-875
4	Screw, RHM, 6-32-3/16	X-49-21
1	Breaker, circuit, 55 A	X-506-47
1	Plate, cover	229183
1	Decal, notice	246242
<b>Circuit Breaker PA-229391</b>		
1	Instructions, installation	TT-875
4	Screw, RHM, 6-32-3/16	X-49-21
1	Breaker, circuit, 18 A	X-506-41
1	Decal, notice	246242
1	Terminal, jumper	249956
<b>Circuit Breaker PA-229394</b>		
1	Instructions, installation	TT-875
4	Screw, RHM, 6-32-3/16	X-49-21
1	Breaker, circuit, 30 A	X-506-36
1	Decal, notice	246242
1	Terminal, jumper	249956
<b>Circuit Breaker PA-344051</b>		
1	Instructions, installation	TT-875
4	Screw, RHM, 6-32-3/16	X-49-21
1	Breaker, circuit, 18 A	X-506-41
1	Decal, notice	246242
<b>Circuit Breaker PA-344052</b>		
1	Instructions, installation	TT-875
4	Screw, RHM, 6-32-3/16	X-49-21
1	Breaker, circuit, 30 A	X-506-36
1	Decal, notice	246242
<b>Circuit Breaker PA-344106</b>		
1	Instructions, installation	TT-875
4	Screw, RHM, 6-32-3/16	X-49-21
1	Breaker, circuit, 22 A	X-506-57
1	Decal, notice	246242
1	Terminal, jumper	249956
<b>Circuit Breaker PA-344309</b>		
1	Instructions, installation	TT-875
4	Screw, RHM, 6-32-3/16	X-49-21
1	Breaker, circuit, A	X-506-57
1	Decal, notice	246242

Qty.	Description	Part No.
<b>Circuit Breaker PA-359286</b>		
1	Instructions, installation	TT-875
4	Screw, RHM, 6-32-3/16	X-49-21
1	Breaker, circuit, 42 A	X-506-60
1	Plate, cover	229183
1	Decal, notice	246242
<b>Circuit Breaker PA-359617</b>		
1	Instructions, installation	TT-875
4	Screw, RHM, 6-32-3/16	X-49-21
1	Breaker, circuit, 18 A	X-506-68
1	Plate, cover	229183
1	Decal, notice	246242
<b>Circuit Breaker PA-359618</b>		
1	Instructions, installation	TT-875
4	Screw, RHM, 6-32-3/16	X-49-21
1	Breaker, circuit, 27 A	X-506-58
1	Plate, cover	229183
1	Decal, notice	246242
<b>Harness Kits</b>		
<b>Harness, Fire System Interface PA-229833</b>		
1	Harness, wiring	229832
1	Instructions, installation	TT-930
<b>Harness, Remote 12 In. Pigtail PA-249941</b>		
1	Harness, extension	249935
<b>Harness for Remote Panel (15 Ft.) PA-249334</b>		
1	Strap, wire, 5/8 in.	X-526-3
1	Harness, extension	249334
<b>Harness for Remote Panel (25 Ft.) PA-249336</b>		
1	Strap, wire, 5/8 in.	X-526-3
1	Harness, extension	249336
<b>Harness, Fuel Solenoid Wiring GM16829-KP1</b>		
1	Harness, wiring	GM16829
<b>Harness, 12 In. Pigtail GM32332-KP1</b>		
1	Harness, pigtail	GM32324
<b>Harness, 15 Ft., Remote Panel GM32333-KP1</b>		
1	Harness, extension	GM30248
<b>Harness, 25 Ft., Remote Panel GM32333-KP2</b>		
1	Harness, extension	GM32323

## Accessories, continued

Qty.	Description	Part No.
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### Panel and Meter Kits

<b>Panel, Remote Start</b>		<b>PA-250797</b>
1	Instructions, installation	TT-642
1	Decal, warning	249494
1	Panel assembly (includes the following)	A-250795
1	Connector Plug, 6 position	241617
1	Panel, remote	250796
1	Switch, rocker	269296

<b>Panel, Remote Start</b>		<b>PA-359581</b>
1	Instructions, installation	TT-1245
1	Decal, warning	249494
1	Panel assembly (includes the following)	A-226965
1	Panel, control	226964
1	Harness, wiring	226979
1	Meter, run time	238736
1	Switch, rocker, 1 pole	344039

<b>Paint, White (1 gallon can)</b>	<b>221334</b>
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<b>Paint, White (aerosol can)</b>	<b>221335</b>
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<b>Panel, Remote Start and 2 Meter (12 V)</b>		<b>PA-344040</b>
1	Instructions, installation	TT-1072
1	Decal, warning	249494
1	Panel assembly (includes the following)	A-344033
1	Panel	344029
1	Harness, wiring	344031
1	Gauge, water temperature	344035
1	Gauge, oil pressure	344036
1	Switch, rocker	344039

<b>Panel, Remote Start and 4 Meter (12 V)</b>		<b>PA-344041</b>
1	Instructions, installation	TT-1073
1	Decal, warning	249494
1	Panel assembly (includes the following)	A-344034
1	Panel	344030
1	Harness, wiring	344032
1	Gauge, water temperature	344035
1	Gauge, oil pressure	344036
1	Voltmeter	344037
1	Switch, rocker	344039
1	Gauge, hourmeter	GM28392
1	Bezel, gauge	GM28393
1	Bulb, light	GM28394
1	Nut, hex	M934-04-B

<b>Remote Start Panel, 12V</b>		<b>GM32335-KP1</b>
1	Panel assy, control 12V	GM33848-1
2	Nut, hex, 3 mm	M934-03-50
2	Washer, lock.146 ID x .285 in. OD	X-22-6
1	Panel, control	GM33847
1	Harness, wiring panel assy, control	GM33851
1	Meter, run time, 10000 hour	238736
1	Switch, rocker, 12V	GM33849
2	Screw, pan head M3 x 12	M7985A-03012-20
1	TT Rmt Start Panel	TT-1378
1	Decal, warning	249494

Qty.	Description	Part No.
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### Filters

<b>Sea Water Strainer</b>		<b>PA-359579</b>
1	Filter, water, 1/2 in.	X-661-1

<b>Fuel Filter</b>		<b>GM14314-KP1</b>
1	Filter, fuel, 1/4 in. NPT	267987
1	Adapter, pipe	278470
1	Connector, hose	X-652-3

### Sender Kits

<b>Sender Kit</b>		<b>PA-359411</b>
1	Adapter, bushing	225127
1	Sender, water temperature	249348
1	Sender, oil pressure	344305
1	Adapter, sender	359461

<b>Sender Kit</b>		<b>GM45891-KA1</b>
1	Sender, water temperature	249348
1	Sender, oil pressure	344305
1	Adapter, sender	359461
1	Instructions, installation	TT-1230

### Ship-To-Shore Switch Kits

<b>Transfer Switch Kit</b>		<b>PAA-246614</b>
1	Switch, transfer	344490
1	Instructions, installation	TT-535

<b>Transfer Switch Kit</b>		<b>PAA-246617</b>
1	Switch, transfer	A-246617
1	Instructions, installation	TT-535



# Accessories, continued

Qty.	Description	Part No.
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## Siphon Break Kits

### Siphon Break

#### (Generator Set without Sound Shield) PA-229928

1	Instructions, installation	TT-1268
1	Clamp, hose, .25/.70 in	X-426-9
1	Tubing, clear flexible plastic	GM34883
1	Valve, siphon break (includes the following)	GM32985
1	Valve, duct	328666
1	Cap, siphon valve	GM32984
1	Loop, siphon valve vent	GM32988

### Siphon Break

#### (Generator Set with Sound Shield) PA-359413

1	Instructions, installation	TT-1184
2	Grommet, 7/8	X-284-7
1	Hose, .62 ID	X-312-42
2	Clamp, hose, 1.2-1 13/32	X-426-3
1	Clamp, hose, .25/.70 in.	X-426-9
2	Connector, hose	344934
1	Hose, molded seawater	359414
1	Tubing, clear flexible plastic	GM34883
1	Valve, siphon break (includes the following)	GM32985
1	Valve, duct	328666
1	Cap, siphon valve	GM32984
1	Loop, siphon valve vent	GM32988

### Siphon Break Hose Connection

#### (Generator Set with Sound Shield) GM41786-KP1

2	Grommet, 7/8	X-284-7
2	Clamp, hose, 1.2-1 13/32	X-426-3
1	Clamp, hose, .25/.70 in.	X-426-9
2	Connector, hose	344934
1	Tubing, clear flexible plastic	GM34883
1	Hose, molded seawater	GM41736
1	Hose, molded seawater	GM41737
1	Valve, siphon break (includes the following)	GM32985
1	Valve, duct	328666
1	Cap, siphon valve	GM32984
1	Loop, siphon valve vent	GM32988

### Siphon Break

#### GM24866-KA1

1	Valve, siphon break (includes the following)	GM32985
1	Valve, duct	328666
1	Cap, siphon valve	GM32984
1	Loop, siphon valve vent	GM32988

Qty.	Description	Part No.
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## Sound Shield Kits

### Sound Shield Kit

#### 359345

5	Screw, hex head, 10-24 x 5/8	X-117-5
5	Washer, plain	X-25-36
4	Washer, plain	X-25-37
5	Washer, plain	X-25-40
2	Clamp, hose	X-426-18
6	Screw	X-465-6
1	Channel, U	X-6047-27
1	Nut, whiz	X-6210-2
1	Hose	X-6251-2
1	Channel, U, 25.75 in.	X-6373-2
7	Rivet, pop	X-781-13
5	Screw, slotted HC	X-97-18
5	Washer, fiber	222889
1	Hose, connector, 1/4 in. x 2 in.	359250
1	Base, sound shield	359369
1	Duct, air outlet	359376
1	Foam, acoustical (kit)	359380
1	Insulation, acoustic	359389
1	Roof subassembly, sound shield	359423
1	Decal, caution not a step	343165
3	Insert, threaded	344484
1	Roof, sound shield	359374
1	Insulation, acoustic	359383
4	Corner, sound shield	359394
3	Pin, threaded	359395
1	Insulation, acoustic	359424
1	Door subassembly (LH)	359425
4	Washer, plain	X-25-6
4	Screw, flat head machine	X-31-9
4	Nut, hex	X-6234-8
1	Port, fire extinguisher	344147
1	Decal, warning	344435
1	Decal, warning	344436
2	Insert, threaded	344484
1	Door, sound shield	359372
1	Insulation, acoustic	359388
1	Latch	359393
2	Pin, threaded	359395
1	Door subassembly, sound shield (front)	359426
2	Insert, threaded	344484
1	Door, sound shield	359373
1	Insulation, acoustic	359386
1	Latch	359393
2	Pin, threaded	359395
1	Insulation, acoustic	359397
1	Door subassembly, sound shield (RH)	359427
2	Insert, threaded, 10-24	346258
1	Door, sound shield	359371
1	Insulation, acoustic	359387
1	Roof subassembly, sound shield	359428
1	Grommet	X-6033-12
4	Rivet, pop	X-781-7
4	Insert, threaded	344484
1	Roof, sound shield	359377
1	Insulation, acoustic	359390
2	Corner, sound shield	359394
1	Support subassembly	359429

## Accessories, continued

Qty.	Description	Part No.
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<b>Sound Shield Kit</b>		<b>359345</b>
1	Grommet	X-284-44
2	Seal, push on trim	X-6422-6
1	Insert, threaded, 10-24	346258
1	Support, sound shield	359370
1	Insulation, acoustic	359381
1	Insulation, acoustic	359382
1	Housing subassembly, alternate	359433
2	Grommet	D-1128
1	Channel, U	X-6047-27
1	Channel, U	X-6047-7
1	Decal	X-6348-6
1	Grommet	200705
3	Insert, threaded, 10-24	346258
1	Housing, alternator	359378
1	Insulation, acoustic	359384
1	Insulation, acoustic	359385
1	Insulation, acoustic	359391
1	Insulation, acoustic	359396
1	Panel subassembly, access	359434
4	Rivet, pop	X-781-13
4	Clip, spring	344146
1	Panel, seawater pump access	359430
1	Insulation, acoustic foam	359432
4	Bracket subassembly, sound	359435
1	Insert, threaded, 10-24	346258
1	Bracket, sound shield	359379

Qty.	Description	Part No.
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<b>Sound Shield Kit</b>		<b>GM10056-KA1</b>
9	Screw, hex head, #10-24 x 0.625	X-117-5
9	Washer, plain, 0.219 x 0.5 x 0.049	X-25-36
4	Washer, plain, 0.406 x 0.812 x 0.065	X-25-37
6	Washer, plain, 0.281 x 0.625 x 0.065	X-25-40
7	Bolt, 1/4-20 x 0.50	X-465-6
1	Nut, whiz, 1/4-20	X-6210-2
4	Bolt, 3/8-16 x 0.62	X-6238-2
3	Rivet, pop	X-781-13
5	Screw, #10-24 x 2.750	X-97-18
7	Washer, plain, 0.203 in. ID x 0.438 in. OD	X-25-115
1	Duct, air outlet, 15.38 x 7.83 in.	GM21386
1	Roof, engine, 23.98 x 18.10 in.	GM22726
	Roof, engine (serial numbers before 722479)	359423
1	Door, service side, 23.99 x 15.50 in.	359425
1	Door, nonservice side, 23.99 x 15.60 in.	359427
1	Roof, alternator, 18.10 x 6.46 in.	359428
1	Support, 15.62 x 15.70 in.	359429
5	Bracket, 1.06 x 0.81 in.	359435
1	Panel, access, 5.38 x 3.25 in.	GM21384
1	Panel, access, 3.61 x 1.94 in.	GM21385
1	Housing, alternator, 18.10 x 6.68 in.	359627
1	Panel, seawater pump access, 8.72 x 8.80 in.	359628
1	Door, engine end, 15.61 x 15.50 in.	GM22724
	Door, engine end (includes latch) (serial numbers before 722479)	GM10062
1	Base, 18.10 x 30.44 in.	GM10290
2	Screw, hex head, #10-24 x 2.0	X-97-14
1	Kit, acoustic foam (include the following)	GM10055
1	Insulation, acoustic, 8.5 x 1.72 in.	359381
1	Insulation, acoustic, 10.88 x 2.5 in.	359382
1	Insulation	359383
1	Insulation, acoustic, 5.44 x 2.38 in.	359384
1	Insulation, acoustic, 10.38 x 5.44 in.	359385
1	Insulation	359387
1	Insulation, acoustic, 22.75 x 14.25 in.	359388
1	Insulation, acoustic, 7.08 x 3.34 in.	359389
1	Insulation	359390
1	Insulation	359391
1	Insulation	359396
1	Insulation, acoustic foam	359424
1	Insulation, acoustic foam	359432
1	Insulation, acoustic foam	359574
1	Insulation, acoustic foam	359626
2	Insulation, acoustic foam	GM10002
1	Insulation, acoustic foam	GM10053
1	Insulation, acoustic foam	GM10054
1	Insulation, acoustic foam	GM10289

## Accessories, continued

Qty.	Description	Part No.
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### Sound Shield Kit

### GM41781-KP1

1	Bracket, sound shield subassembly	359435
1	Base, sound shield	GM39756
1	Door subassy, sound shield (RH)	GM39829
1	Door subassy, sound shield (rear)	GM39865
1	Door subassy, sound shield (front)	GM39866
1	Roof subassy, sound shield	GM39867
1	Door subassy, sound shield (LH)	GM39868
1	Panel subassy, bulkhead connection	GM41696
1	Panel subassy, sound shield (rear)	GM41712
1	Duct, subassy, air intake	GM41808
1	Cable, battery (red)	X-545-185
1	Cable, battery (black)	X-545-186
1	Conduit, convoluted	X-6003-10
1	Foam, sound hsg kit (includes the following)	GM41721
1	Foam, acoustic (bulkhead panel)	GM41722
1	Foam, acoustic (bulkhead panel)	GM41723
1	Foam, acoustic (rear door)	GM41724
1	Foam, acoustic (front door)	GM41725
1	Foam, acoustic (front door)	GM41726
1	Foam, acoustic (front door)	GM41727
1	Foam, acoustic (RH door)	GM41728
1	Foam, acoustic (roof)	GM41729
1	Foam, acoustic (rear panel)	GM41730
1	Foam, acoustic (RH door)	GM41731
1	Foam, acoustic (LH door)	GM41773
1	Foam, acoustic (RH door)	GM42334
1	Foam, acoustic (RH door)	GM42335

Qty.	Description	Part No.
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### Miscellaneous Kits

#### Lifting Eye Tool

#### PA-359572

1	Eye, lifting	359572
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#### Oil Drain Extension Kit

#### GM10102-KA1

1	Panel, oil hose	GM10101
1	Hose, rubber, straight, .375 in.	X-651-15
2	Clamp, hose, .25/.70 in	X-426-9
1	Coupling, hose	X-582-9
1	Decal, drain	GM14167
1	Plug, pipe, 3/8 in. white nylon	X-75-55

#### Corrosion Protection Kit

#### GM29572-KP1

2	Spacer	X-400-255
2	Screw, slotted round head machine	X-51-41
2	Washer, plain, .154 ID x .31 in. OD	X-25-120
1	Cover, choke	GM29564
1	Cover, generator air inlet	GM29550
1	Tray, drip	GM29571

#### Drip Tray, Stainless

#### GM29979-KA1

1	Tray, drip	GM29571
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## Notes

# Appendix A Abbreviations

The following list contains abbreviations that may appear in this publication.

A, amp	ampere	cfm	cubic feet per minute	ext.	external
ABDC	after bottom dead center	CG	center of gravity	F	Fahrenheit, female
AC	alternating current	CID	cubic inch displacement	fglass.	fiberglass
A/D	analog to digital	CL	centerline	FHM	flat head machine (screw)
ADC	analog to digital converter	cm	centimeter	fl. oz.	fluid ounce
adj.	adjust, adjustment	CMOS	complementary metal oxide substrate (semiconductor)	flex.	flexible
ADV	advertising dimensional drawing	cogen.	cogeneration	freq.	frequency
AHWT	anticipatory high water temperature	com	communications (port)	FS	full scale
AISI	American Iron and Steel Institute	coml	commercial	ft.	foot, feet
ALOP	anticipatory low oil pressure	Coml/Rec	Commercial/Recreational	ft. lb.	foot pounds (torque)
alt.	alternator	conn.	connection	ft./min.	feet per minute
Al	aluminum	cont.	continued	g	gram
ANSI	American National Standards Institute (formerly American Standards Association, ASA)	CPVC	chlorinated polyvinyl chloride	ga.	gauge (meters, wire size)
AO	anticipatory only	crit.	critical	gal.	gallon
API	American Petroleum Institute	CRT	cathode ray tube	gen.	generator
approx.	approximate, approximately	CSA	Canadian Standards Association	genset	generator set
AR	as required, as requested	CT	current transformer	GFI	ground fault interrupter
AS	as supplied, as stated, as suggested	Cu	copper	GND, ⊕	ground
ASE	American Society of Engineers	cu. in.	cubic inch	gov.	governor
ASME	American Society of Mechanical Engineers	cw.	clockwise	gph	gallons per hour
assy.	assembly	CWC	city water-cooled	gpm	gallons per minute
ASTM	American Society for Testing Materials	cyl.	cylinder	gr.	grade, gross
ATDC	after top dead center	D/A	digital to analog	GRD	equipment ground
ATS	automatic transfer switch	DAC	digital to analog converter	gr. wt.	gross weight
auto.	automatic	dB	decibel	H x W x D	height by width by depth
aux.	auxiliary	dBA	decibel (A weighted)	HC	hex cap
A/V	audiovisual	DC	direct current	HCHT	high cylinder head temperature
avg.	average	DCR	direct current resistance	HD	heavy duty
AVR	automatic voltage regulator	deg., °	degree	HET	high exhaust temperature, high engine temperature
AWG	American Wire Gauge	dept.	department	hex	hexagon
AWM	appliance wiring material	dia.	diameter	Hg	mercury (element)
bat.	battery	DI/EO	dual inlet/end outlet	HH	hex head
BBDC	before bottom dead center	DIN	Deutsches Institut für Normung e. V. (also Deutsche Industrie Normenausschuss)	HHC	hex head cap
BC	battery charger, battery charging	DIP	dual inline package	HP	horsepower
BCA	battery charging alternator	DPDT	double-pole, double-throw	hr.	hour
BCI	Battery Council International	DPST	double-pole, single-throw	HS	heat shrink
BDC	before dead center	DS	disconnect switch	hsg.	housing
BHP	brake horsepower	DVR	digital voltage regulator	HVAC	heating, ventilation, and air conditioning
blk.	black (paint color), block (engine)	E, emer.	emergency (power source)	HWT	high water temperature
blk. htr.	block heater	EDI	electronic data interchange	Hz	hertz (cycles per second)
BMEP	brake mean effective pressure	EFR	emergency frequency relay	IC	integrated circuit
bps	bits per second	e.g.	for example ( <i>exempli gratia</i> )	ID	inside diameter, identification
br.	brass	EG	electronic governor	IEC	International Electrotechnical Commission
BTDC	before top dead center	EGSA	Electrical Generating Systems Association	IEEE	Institute of Electrical and Electronics Engineers
Btu	British thermal unit	EIA	Electronic Industries Association	IMS	improved motor starting
Btu/min.	British thermal units per minute	EI/EO	end inlet/end outlet	in.	inch
C	Celsius, centigrade	EMI	electromagnetic interference	in. H <sub>2</sub> O	inches of water
cal.	calorie	emiss.	emission	in. Hg	inches of mercury
CARB	California Air Resources Board	eng.	engine	in. lb.	inch pounds
CB	circuit breaker	EPA	Environmental Protection Agency	Inc.	incorporated
cc	cubic centimeter	EPS	emergency power system	ind.	industrial
CCA	cold cranking amps	ER	emergency relay	int.	internal
ccw.	counterclockwise	ES	engineering special, engineered special	int./ext.	internal/external
CEC	Canadian Electrical Code	ESD	electrostatic discharge	I/O	input/output
cert.	certificate, certification, certified	est.	estimated	IP	iron pipe
cfh	cubic feet per hour	E-Stop	emergency stop	ISO	International Organization for Standardization
		etc.	et cetera (and so forth)	J	joule
		exh.	exhaust	JIS	Japanese Industry Standard
				k	kilo (1000)
				K	kelvin

kA	kiloampere	MTBO	mean time between overhauls	rly.	relay
KB	kilobyte (2 <sup>10</sup> bytes)	mtg.	mounting	rms	root mean square
kg	kilogram	MW	megawatt	rnd.	round
kg/cm <sup>2</sup>	kilograms per square centimeter	mW	milliwatt	ROM	read only memory
kgm	kilogram-meter	μF	microfarad	rot.	rotate, rotating
kg/m <sup>3</sup>	kilograms per cubic meter	N, norm.	normal (power source)	rpm	revolutions per minute
kHz	kilohertz	NA	not available, not applicable	RS	right side
kJ	kilojoule	nat. gas	natural gas	RTV	room temperature vulcanization
km	kilometer	NBS	National Bureau of Standards	SAE	Society of Automotive Engineers
kOhm, kΩ	kilo-ohm	NC	normally closed	scfm	standard cubic feet per minute
kPa	kilopascal	NEC	National Electrical Code	SCR	silicon controlled rectifier
kph	kilometers per hour	NEMA	National Electrical Manufacturers Association	s, sec.	second
kV	kilovolt	NFPA	National Fire Protection Association	SI	<i>Système international d'unités</i> , International System of Units
kVA	kilovolt ampere	Nm	newton meter	SI/EO	side in/end out
kVAR	kilovolt ampere reactive	NO	normally open	sil.	silencer
kW	kilowatt	no., nos.	number, numbers	SN	serial number
kWh	kilowatt-hour	NPS	National Pipe, Straight	SPDT	single-pole, double-throw
kWm	kilowatt mechanical	NPSC	National Pipe, Straight-coupling	SPST	single-pole, single-throw
L	liter	NPT	National Standard taper pipe thread per general use	spec, specs	specification(s)
LAN	local area network	NPTF	National Pipe, Taper-Fine	sq.	square
L x W x H	length by width by height	NR	not required, normal relay	sq. cm	square centimeter
lb.	pound, pounds	ns	nanosecond	sq. in.	square inch
lbm/ft <sup>3</sup>	pounds mass per cubic feet	OC	overcrank	SS	stainless steel
LCB	line circuit breaker	OD	outside diameter	std.	standard
LCD	liquid crystal display	OEM	original equipment manufacturer	stl.	steel
ld. shd.	load shed	OF	overfrequency	tach.	tachometer
LED	light emitting diode	opt.	option, optional	TD	time delay
Lph	liters per hour	OS	oversize, overspeed	TDC	top dead center
Lpm	liters per minute	OSHA	Occupational Safety and Health Administration	TDEC	time delay engine cooldown
LOP	low oil pressure	OV	overvoltage	TDEN	time delay emergency to normal
LP	liquefied petroleum	oz.	ounce	TDES	time delay engine start
LPG	liquefied petroleum gas	p., pp.	page, pages	TDNE	time delay normal to emergency
LS	left side	PC	personal computer	TDOE	time delay off to emergency
L <sub>wa</sub>	sound power level, A weighted	PCB	printed circuit board	TDON	time delay off to normal
LWL	low water level	pF	picofarad	temp.	temperature
LWT	low water temperature	PF	power factor	term.	terminal
m	meter, milli (1/1000)	ph., ∅	phase	TIF	telephone influence factor
M	mega (10 <sup>6</sup> when used with SI units), male	PHC	Phillips head crimp (screw)	TIR	total indicator reading
m <sup>3</sup>	cubic meter	PHH	Phillips hex head (screw)	tol.	tolerance
m <sup>3</sup> /min.	cubic meters per minute	PHM	pan head machine (screw)	turbo.	turbocharger
mA	milliampere	PLC	programmable logic control	typ.	typical (same in multiple locations)
man.	manual	PMG	permanent-magnet generator	UF	underfrequency
max.	maximum	pot	potentiometer, potential	UHF	ultrahigh frequency
MB	megabyte (2 <sup>20</sup> bytes)	ppm	parts per million	UL	Underwriter's Laboratories, Inc.
MCM	one thousand circular mils	PROM	programmable read-only memory	UNC	unified coarse thread (was NC)
MCCB	molded-case circuit breaker	psi	pounds per square inch	UNF	unified fine thread (was NF)
meggar	megohmmeter	pt.	pint	univ.	universal
MHz	megahertz	PTC	positive temperature coefficient	US	undersize, underspeed
mi.	mile	PTO	power takeoff	UV	ultraviolet, undervoltage
mil	one one-thousandth of an inch	PVC	polyvinyl chloride	V	volt
min.	minimum, minute	qt.	quart, quarts	VAC	volts alternating current
misc.	miscellaneous	qty.	quantity	VAR	voltampere reactive
MJ	megajoule	R	replacement (emergency) power source	VDC	volts direct current
mJ	millijoule	rad.	radiator, radius	VFD	vacuum fluorescent display
mm	millimeter	RAM	random access memory	VGA	video graphics adapter
mOhm, mΩ	milliohm	RDO	relay driver output	VHF	very high frequency
MOhm, MΩ	megohm	ref.	reference	W	watt
MOV	metal oxide varistor	rem.	remote	WCR	withstand and closing rating
MPa	megapascal	Res/Coml	Residential/Commercial	w/	with
mpg	miles per gallon	RFI	radio frequency interference	w/o	without
mph	miles per hour	RH	round head	wt.	weight
MS	military standard	RHM	round head machine (screw)	xfrm	transformer
m/sec.	meters per second				
MTBF	mean time between failure				

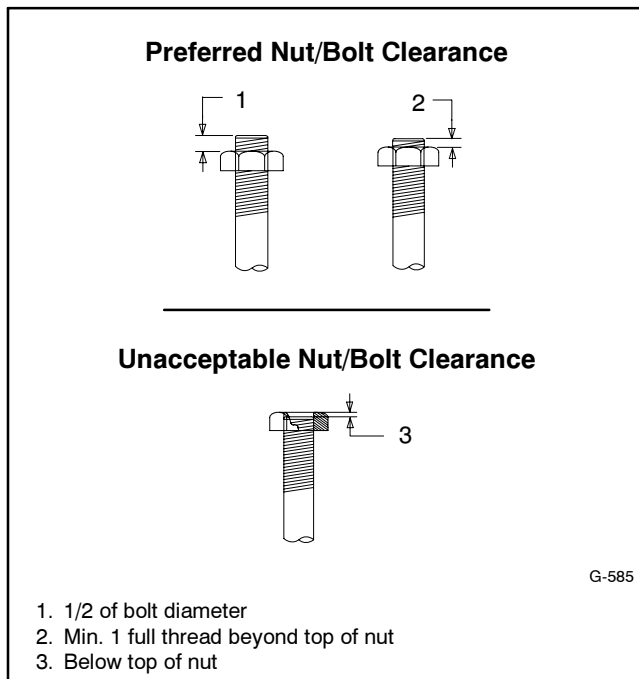
## Appendix B Common Hardware Application Guidelines

Use the information below and on the following pages to identify proper fastening techniques when no specific reference for reassembly is made.

**Bolt/Screw Length:** When bolt/screw length is not given, use Figure 1 as a guide. As a general rule, a minimum length of one thread beyond the nut and a maximum length of 1/2 the bolt/screw diameter beyond the nut is the preferred method.

**Washers and Nuts:** Use split lock washers as a bolt locking device where specified. Use SAE flat washers with whiz nuts, spirallock nuts, or standard nuts and preloading (torque) of the bolt in all other applications.

See Appendix C, General Torque Specifications, and other torque specifications in the service literature.



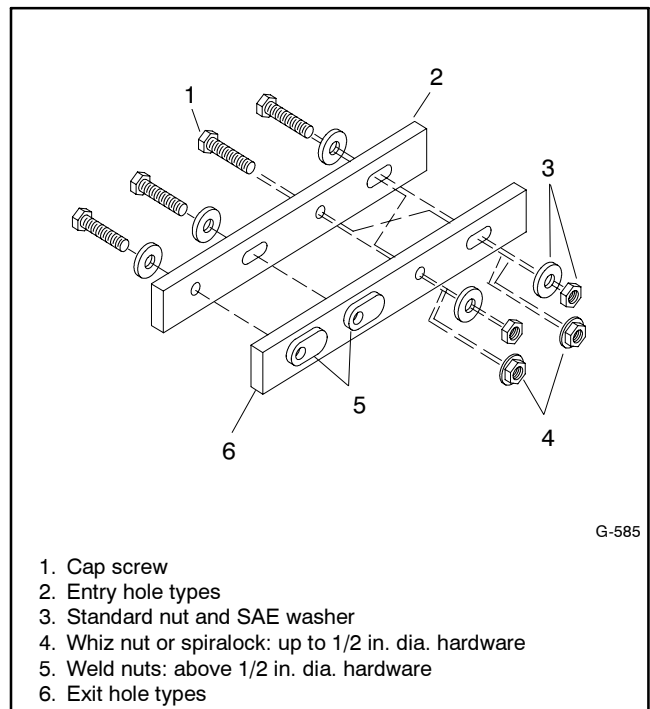
**Figure 1** Acceptable Bolt Lengths

Steps for common hardware application:

1. Determine entry hole type: round or slotted.
2. Determine exit hole type: fixed female thread (weld nut), round, or slotted.

For round and slotted exit holes, determine if hardware is greater than 1/2 inch in diameter, or 1/2 inch in diameter or less. Hardware that is *greater than 1/2 inch* in diameter takes a standard nut and SAE washer. Hardware *1/2 inch or less* in diameter can take a properly torqued whiz nut or spirallock nut. See Figure 2.

3. Follow these SAE washer rules after determining exit hole type:
  - a. Always use a washer between hardware and a slot.
  - b. Always use a washer under a nut (see 2 above for exception).
  - c. Use a washer under a bolt when the female thread is fixed (weld nut).
4. Refer to Figure 2, which depicts the preceding hardware configuration possibilities.



**Figure 2** Acceptable Hardware Combinations

## Appendix C General Torque Specifications

American Standard Fasteners Torque Specifications					
Size	Torque Measurement	Assembled into Cast Iron or Steel			Assembled into Aluminum Grade 2 or 5
		Grade 2	Grade 5	Grade 8	
8-32	Nm (in. lb.)	1.8 (16)	2.3 (20)	—	See Note 3
10-24	Nm (in. lb.)	2.9 (26)	3.6 (32)	—	
10-32	Nm (in. lb.)	2.9 (26)	3.6 (32)	—	
1/4-20	Nm (in. lb.)	6.8 (60)	10.8 (96)	14.9 (132)	
1/4-28	Nm (in. lb.)	8.1 (72)	12.2 (108)	16.3 (144)	
5/16-18	Nm (in. lb.)	13.6 (120)	21.7 (192)	29.8 (264)	
5/16-24	Nm (in. lb.)	14.9 (132)	23.1 (204)	32.5 (288)	
3/8-16	Nm (ft. lb.)	24.0 (18)	38.0 (28)	53.0 (39)	
3/8-24	Nm (ft. lb.)	27.0 (20)	42.0 (31)	60.0 (44)	
7/16-14	Nm (ft. lb.)	39.0 (29)	60.0 (44)	85.0 (63)	
7/16-20	Nm (ft. lb.)	43.0 (32)	68.0 (50)	95.0 (70)	
1/2-13	Nm (ft. lb.)	60.0 (44)	92.0 (68)	130.0 (96)	
1/2-20	Nm (ft. lb.)	66.0 (49)	103.0 (76)	146.0 (108)	
9/16-12	Nm (ft. lb.)	81.0 (60)	133.0 (98)	187.0 (138)	
9/16-18	Nm (ft. lb.)	91.0 (67)	148.0 (109)	209.0 (154)	
5/8-11	Nm (ft. lb.)	113.0 (83)	183.0 (135)	259.0 (191)	
5/8-18	Nm (ft. lb.)	128.0 (94)	208.0 (153)	293.0 (216)	
3/4-10	Nm (ft. lb.)	199.0 (147)	325.0 (240)	458.0 (338)	
3/4-16	Nm (ft. lb.)	222.0 (164)	363.0 (268)	513.0 (378)	
1-8	Nm (ft. lb.)	259.0 (191)	721.0 (532)	1109.0 (818)	
1-12	Nm (ft. lb.)	283.0 (209)	789.0 (582)	1214.0 (895)	















Metric Fasteners Torque Specifications, Measured in Nm (ft. lb.)				
Size (mm)	Assembled into Cast Iron or Steel			Assembled into Aluminum Grade 5.8 or 8.8
	Grade 5.8	Grade 8.8	Grade 10.9	
M6 x 1.00	6.2 (4.6)	9.5 (7)	13.6 (10)	See Note 3
M8 x 1.25	15.0 (11)	23.0 (17)	33.0 (24)	
M8 x 1.00	16.0 (11)	24.0 (18)	34.0 (25)	
M10 x 1.50	30.0 (22)	45.0 (34)	65.0 (48)	
M10 x 1.25	31.0 (23)	47.0 (35)	68.0 (50)	
M12 x 1.75	53.0 (39)	80.0 (59)	115.0 (85)	
M12 x 1.50	56.0 (41)	85.0 (63)	122.0 (90)	
M14 x 2.00	83.0 (61)	126.0 (93)	180.0 (133)	
M14 x 1.50	87.0 (64)	133.0 (98)	190.0 (140)	
M16 x 2.00	127.0 (94)	194.0 (143)	278.0 (205)	
M16 x 1.50	132.0 (97)	201.0 (148)	287.0 (212)	
M18 x 2.50	179.0 (132)	273.0 (201)	390.0 (288)	
M18 x 1.50	189.0 (140)	289.0 (213)	413.0 (305)	












### Notes:








- Do not use these values when the torque values are specified on the assembly drawing.
- These values are based on new plates threads. Increase values by 15% if non-plated threads are used.
- Hardware threaded into aluminum must have two diameters of thread engagement or may require 30% or more reduction in the torque.
- Torques are calculated as equivalent stress loading to American hardware and approximately a preload of 90% of yield strength and friction coefficient of 0.125.



# Appendix D Common Hardware Identification

Screw/Bolts/Studs	
Head Styles	
Hex Head or Machine Head	
Hex Head or Machine Head with Washer	
Flat Head (FHM)	
Round Head (RHM)	
Pan Head	
Hex Socket Head Cap or Allen™ Head Cap	
Hex Socket Head or Allen™ Head Shoulder Bolt	
Sheet Metal Screw	
Stud	
Drive Styles	
Hex	
Hex and Slotted	
Phillips®	
Slotted	
Hex Socket	

Nuts	
Nut Styles	
Hex Head	
Lock or Elastic	
Square	
Cap or Acorn	
Wing	
Washers	
Washer Styles	
Plain	
Split Lock or Spring	
Spring or Wave	
External Tooth Lock	
Internal Tooth Lock	
Internal-External Tooth Lock	

Hardness Grades	
American Standard	
Grade 2	 
Grade 5	 
Grade 8	
Grade 8/9 (Hex Socket Head)	
Metric	
Number stamped on hardware; 5.8 shown	

Allen™ head screw is a trademark of Holo-Krome Co.

Phillips® screw is a registered trademark of Phillips Screw Company.

## Sample Dimensions

### American Standard (Screws, Bolts, Studs, and Nuts)

1/4-20 x 1  
 ——— Length In Inches (Screws and Bolts)  
 ——— Threads Per Inch  
 ——— Major Thread Diameter In Fractional Inches Or Screw Number Size

### Metric (Screws, Bolts, Studs, and Nuts)

M8-1.25 x 20  
 ——— Length In Millimeters (Screws and Bolts)  
 ——— Distance Between Threads In Millimeters  
 ——— Major Thread Diameter In Millimeters

### Plain Washers

9/32 x 5/8 x 1/16  
 ——— Thickness  
 ——— External Dimension  
 ——— Internal Dimension

### Lock Washers

5/8  
 ——— Internal Dimension

# Appendix E Common Hardware List

The Common Hardware List lists part numbers and dimensions for common hardware items.

## American Standard

### Part No. Dimensions Hex Head Bolts (Grade 5)

X-465-17	1/4-20 x .38
X-465-6	1/4-20 x .50
X-465-2	1/4-20 x .62
X-465-16	1/4-20 x .75
X-465-18	1/4-20 x .88
X-465-7	1/4-20 x 1.00
X-465-8	1/4-20 x 1.25
X-465-9	1/4-20 x 1.50
X-465-10	1/4-20 x 1.75
X-465-11	1/4-20 x 2.00
X-465-12	1/4-20 x 2.25
X-465-14	1/4-20 x 2.75
X-465-21	1/4-20 x 5.00
X-465-25	1/4-28 x .38
X-465-20	1/4-28 x 1.00
X-125-33	5/16-18 x .50
X-125-23	5/16-18 x .62
X-125-3	5/16-18 x .75
X-125-31	5/16-18 x .88
X-125-5	5/16-18 x 1.00
X-125-24	5/16-18 x 1.25
X-125-34	5/16-18 x 1.50
X-125-25	5/16-18 x 1.75
X-125-26	5/16-18 x 2.00
230578	5/16-18 x 2.25
X-125-29	5/16-18 x 2.50
X-125-27	5/16-18 x 2.75
X-125-28	5/16-18 x 3.00
X-125-22	5/16-18 x 4.50
X-125-32	5/16-18 x 5.00
X-125-35	5/16-18 x 5.50
X-125-36	5/16-18 x 6.00
X-125-40	5/16-18 x 6.50
X-125-43	5/16-24 x 1.75
X-125-44	5/16-24 x 2.50
X-125-30	5/16-24 x .75
X-125-39	5/16-24 x 2.00
X-125-38	5/16-24 x 2.75
X-6238-2	3/8-16 x .62
X-6238-10	3/8-16 x .75
X-6238-3	3/8-16 x .88
X-6238-11	3/8-16 x 1.00
X-6238-4	3/8-16 x 1.25
X-6238-5	3/8-16 x 1.50
X-6238-1	3/8-16 x 1.75
X-6238-6	3/8-16 x 2.00
X-6238-17	3/8-16 x 2.25
X-6238-7	3/8-16 x 2.50
X-6238-8	3/8-16 x 2.75
X-6238-9	3/8-16 x 3.00
X-6238-19	3/8-16 x 3.25
X-6238-12	3/8-16 x 3.50
X-6238-20	3/8-16 x 3.75
X-6238-13	3/8-16 x 4.50
X-6238-18	3/8-16 x 5.50
X-6238-25	3/8-16 x 6.50

### Part No. Dimensions Hex Head Bolts, cont.

X-6238-14	3/8-24 x .75
X-6238-16	3/8-24 x 1.25
X-6238-21	3/8-24 x 4.00
X-6238-22	3/8-24 x 4.50
X-6024-5	7/16-14 x .75
X-6024-2	7/16-14 x 1.00
X-6024-8	7/16-14 x 1.25
X-6024-3	7/16-14 x 1.50
X-6024-4	7/16-14 x 2.00
X-6024-11	7/16-14 x 2.75
X-6024-12	7/16-14 x 6.50
X-129-15	1/2-13 x .75
X-129-17	1/2-13 x 1.00
X-129-18	1/2-13 x 1.25
X-129-19	1/2-13 x 1.50
X-129-20	1/2-13 x 1.75
X-129-21	1/2-13 x 2.00
X-129-22	1/2-13 x 2.25
X-129-23	1/2-13 x 2.50
X-129-24	1/2-13 x 2.75
X-129-25	1/2-13 x 3.00
X-129-27	1/2-13 x 3.50
X-129-29	1/2-13 x 4.00
X-129-30	1/2-13 x 4.50
X-463-9	1/2-13 x 5.50
X-129-44	1/2-13 x 6.00
X-129-51	1/2-20 x .75
X-129-45	1/2-20 x 1.25
X-129-52	1/2-20 x 1.50
X-6021-3	5/8-11 x 1.00
X-6021-4	5/8-11 x 1.25
X-6021-2	5/8-11 x 1.50
X-6021-1	5/8-11 x 1.75
273049	5/8-11 x 2.00
X-6021-5	5/8-11 x 2.25
X-6021-6	5/8-11 x 2.50
X-6021-7	5/8-11 x 2.75
X-6021-12	5/8-11 x 3.75
X-6021-11	5/8-11 x 4.50
X-6021-10	5/8-11 x 6.00
X-6021-9	5/8-18 x 2.50
X-6239-1	3/4-10 x 1.00
X-6239-8	3/4-10 x 1.25
X-6239-2	3/4-10 x 1.50
X-6239-3	3/4-10 x 2.00
X-6239-4	3/4-10 x 2.50
X-6239-5	3/4-10 x 3.00
X-6239-6	3/4-10 x 3.50
X-792-1	1-8 x 2.25
X-792-5	1-8 x 3.00
X-792-8	1-8 x 5.00

### Part No. Dimensions Type

#### Hex Nuts

X-6009-1	1-8	Standard
X-6210-3	6-32	Whiz
X-6210-4	8-32	Whiz
X-6210-5	10-24	Whiz
X-6210-1	10-32	Whiz
X-6210-2	1/4-20	Spiralock
X-6210-6	1/4-28	Spiralock
X-6210-7	5/16-18	Spiralock
X-6210-8	5/16-24	Spiralock
X-6210-9	3/8-16	Spiralock
X-6210-10	3/8-24	Spiralock
X-6210-11	7/16-14	Spiralock
X-6210-12	1/2-13	Spiralock
X-6210-15	7/16-20	Spiralock
X-6210-14	1/2-20	Spiralock
X-85-3	5/8-11	Standard
X-88-12	3/4-10	Standard
X-89-2	1/2-20	Standard

#### Washers

Part No.	ID	OD	Thick.	Bolt/ Screw
X-25-46	.125	.250	.022	#4
X-25-9	.156	.375	.049	#6
X-25-48	.188	.438	.049	#8
X-25-36	.219	.500	.049	#10
X-25-40	.281	.625	.065	1/4
X-25-85	.344	.687	.065	5/16
X-25-37	.406	.812	.065	3/8
X-25-34	.469	.922	.065	7/16
X-25-26	.531	1.062	.095	1/2
X-25-15	.656	1.312	.095	5/8
X-25-29	.812	1.469	.134	3/4
X-25-127	1.062	2.000	.134	1

## Metric

Hex head bolts are hardness grade 8.8 unless noted.

### Part No. Dimensions Hex Head Bolts (Partial Thread)

M931-05055-60	M5-0.80 x 55
M931-06040-60	M6-1.00 x 40
M931-06055-60	M6-1.00 x 55
M931-06060-60	M6-1.00 x 60
M931-06060-SS	M6-1.00 x 60
M931-06070-60	M6-1.00 x 70
M931-06070-SS	M6-1.00 x 70
M931-06075-60	M6-1.00 x 75
M931-06090-60	M6-1.00 x 90
M931-06145-60	M6-1.00 x 145
M931-06150-60	M6-1.00 x 150
M931-08035-60	M8-1.25 x 35
M931-08040-60	M8-1.25 x 40
M931-08045-60	M8-1.25 x 45
M931-08050-60	M8-1.25 x 50
M931-08055-60	M8-1.25 x 55
M931-08055-82	M8-1.25 x 55*
M931-08060-60	M8-1.25 x 60
M931-08070-60	M8-1.25 x 70
M931-08070-82	M8-1.25 x 70*
M931-08075-60	M8-1.25 x 75
M931-08080-60	M8-1.25 x 80
M931-08090-60	M8-1.25 x 90
M931-08095-60	M8-1.25 x 95
M931-08100-60	M8-1.25 x 100
M931-08110-60	M8-1.25 x 110
M931-08120-60	M8-1.25 x 120
M931-08130-60	M8-1.25 x 130
M931-08140-60	M8-1.25 x 140
M931-08150-60	M8-1.25 x 150
M931-08200-60	M8-1.25 x 200
M931-10040-82	M10-1.25 x 40*
M931-10040-60	M10-1.50 x 40
M931-10045-60	M10-1.50 x 45
M931-10050-60	M10-1.50 x 50
M931-10050-82	M10-1.25 x 50*
M931-10055-60	M10-1.50 x 55
M931-10060-60	M10-1.50 x 60
M931-10065-60	M10-1.50 x 65
M931-10070-60	M10-1.50 x 70
M931-10080-60	M10-1.50 x 80
M931-10080-82	M10-1.25 x 80*
M931-10090-60	M10-1.50 x 90
M931-10090-82	M10-1.50 x 90*
M931-10100-60	M10-1.50 x 100
M931-10110-60	M10-1.50 x 110
M931-10120-60	M10-1.50 x 120
M931-10130-60	M10-1.50 x 130
M931-10140-60	M10-1.50 x 140
M931-10180-60	M10-1.50 x 180
M931-10235-60	M10-1.50 x 235
M931-10260-60	M10-1.50 x 260
M960-10330-60	M10-1.25 x 330
M931-12045-60	M12-1.75 x 45
M960-12050-60	M12-1.25 x 50
M960-12050-82	M12-1.25 x 50*
M931-12050-60	M12-1.75 x 50
M931-12050-82	M12-1.75 x 50*
M931-12055-60	M12-1.75 x 55
M931-12060-60	M12-1.75 x 60
M931-12060-82	M12-1.75 x 60*
M931-12065-60	M12-1.75 x 65
M931-12075-60	M12-1.75 x 75
M931-12080-60	M12-1.75 x 80
M931-12090-60	M12-1.75 x 90
M931-12100-60	M12-1.75 x 100
M931-12110-60	M12-1.75 x 110

### Part No. Dimensions Hex Head Bolts (Partial Thread), continued

M960-16090-60	M16-1.50 x 90
M931-16090-60	M16-2.00 x 90
M931-16100-60	M16-2.00 x 100
M931-16100-82	M16-2.00 x 100*
M931-16120-60	M16-2.00 x 120
M931-16150-60	M16-2.00 x 150
M931-20065-60	M20-2.50 x 65
M931-20090-60	M20-2.50 x 90
M931-20100-60	M20-2.50 x 100
M931-20120-60	M20-2.50 x 120
M931-20140-60	M20-2.50 x 140
M931-20160-60	M20-2.50 x 160
M931-22090-60	M22-2.50 x 90
M931-22120-60	M22-2.50 x 120
M931-22160-60	M22-2.50 x 160
M931-24090-60	M24-3.00 x 90
M931-24120-60	M24-3.00 x 120
M931-24160-60	M24-3.00 x 160
M931-24200-60	M24-3.00 x 200

### Hex Head Bolts (Full Thread)

M933-04006-60	M4-0.70 x 6
M933-05030-60	M5-0.80 x 30
M933-05035-60	M5-0.80 x 35
M933-05050-60	M5-0.80 x 50
M933-06010-60	M6-1.00 x 10
M933-06012-60	M6-1.00 x 12
M933-06014-60	M6-1.00 x 14
M933-06016-60	M6-1.00 x 16
M933-06020-60	M6-1.00 x 20
M933-06025-60	M6-1.00 x 25
M933-06030-60	M6-1.00 x 30
M933-06040-60	M6-1.00 x 40
M933-06050-60	M6-1.00 x 50
M933-07025-60	M7-1.00 x 25
M933-08010-60	M8-1.25 x 10
M933-08012-60	M8-1.25 x 12
M933-08016-60	M8-1.25 x 16
M933-08020-60	M8-1.25 x 20
M933-08025-60	M8-1.25 x 25
M933-08030-60	M8-1.25 x 30
M933-08030-82	M8-1.25 x 30*
M933-10012-60	M10-1.50 x 12
M961-10020-60	M10-1.25 x 20
M933-10020-60	M10-1.50 x 20
M933-10025-60	M10-1.50 x 25
M961-10025-60	M10-1.25 x 25
M933-10025-82	M10-1.50 x 25*
M961-10030-60	M10-1.25 x 30
M933-10030-60	M10-1.50 x 30
M933-10030-82	M10-1.50 x 30*
M961-10035-60	M10-1.25 x 35
M933-10035-60	M10-1.50 x 35
M933-10035-82	M10-1.50 x 35*
M961-10040-60	M10-1.25 x 40

### Part No. Dimensions Hex Head Bolts (Full Thread), continued

M933-12016-60	M12-1.75 x 16
M933-12020-60	M12-1.75 x 20
M961-12020-60F	M12-1.50 x 20
M933-12025-60	M12-1.75 x 25
M933-12025-82	M12-1.75 x 25*
M961-12030-60	M12-1.25 x 30
M933-12030-82	M12-1.75 x 30*
M961-12030-82F	M12-1.50 x 30*
M933-12030-60	M12-1.75 x 30
M933-12035-60	M12-1.75 x 35
M961-12040-82	M12-1.25 x 40*
M933-12040-60	M12-1.75 x 40
M933-12040-82	M12-1.75 x 40*
M961-14025-60	M14-1.50 x 25
M933-14025-60	M14-2.00 x 25
M961-14050-82	M14-1.50 x 50*
M961-16025-60	M16-1.50 x 25
M933-16025-60	M16-2.00 x 25
M961-16030-82	M16-1.50 x 30*
M933-16030-82	M16-2.00 x 30*
M933-16035-60	M16-2.00 x 35
M961-16040-60	M16-1.50 x 40
M933-16040-60	M16-2.00 x 40
M961-16045-82	M16-1.50 x 45*
M933-16045-82	M16-2.00 x 45*
M933-16050-60	M16-2.00 x 50
M933-16050-82	M16-2.00 x 50*
M933-16060-60	M16-2.00 x 60
M933-16070-60	M16-2.00 x 70
M933-18035-60	M18-2.50 x 35
M933-18050-60	M18-2.50 x 50
M933-18060-60	M18-2.50 x 60
M933-20050-60	M20-2.50 x 50
M933-20055-60	M20-2.50 x 55
M933-24060-60	M24-3.00 x 60
M933-24065-60	M24-3.00 x 65
M933-24070-60	M24-3.00 x 70

### Pan Head Machine Screws

M7985A-03010-20	M3-0.50 x 10
M7985A-03012-20	M3-0.50 x 12
M7985A-04010-20	M4-0.70 x 10
M7985A-04016-20	M4-0.70 x 16
M7985A-04020-20	M4-0.70 x 20
M7985A-04050-20	M4-0.70 x 50
M7985A-04100-20	M4-0.70 x 100
M7985A-05010-20	M5-0.80 x 10
M7985A-05012-20	M5-0.80 x 12
M7985A-05016-20	M5-0.80 x 16
M7985A-05020-20	M5-0.80 x 20
M7985A-05025-20	M5-0.80 x 25
M7985A-05030-20	M5-0.80 x 30
M7985A-05080-20	M5-0.80 x 80
M7985A-05100-20	M5-0.80 x 100
M7985A-06100-20	M6-1.00 x 100

### Flat Head Machine Screws

M965A-04012-SS	M4-0.70 x 12
M965A-05012-SS	M5-0.80 x 12
M965A-05016-20	M5-0.80 x 16
M965A-06012-20	M6-1.00 x 12

\* This metric hex bolt's hardness is grade 10.9.

## Metric, continued

Part No.	Dimensions	Type
<b>Hex Nuts</b>		
M934-03-50	M3-0.50	Standard
M934-04-50	M4-0.70	Standard
M934-04-B	M4-0.70	Brass
M934-05-50	M5-0.80	Standard
M934-06-60	M6-1.00	Standard
M934-06-64	M6-1.00	Std. (green)
M6923-06-80	M6-1.00	Spiralock
M982-06-80	M6-1.00	Elastic Stop
M934-08-60	M8-1.25	Standard
M6923-08-80	M8-1.25	Spiralock
M982-08-80	M8-1.25	Elastic Stop
M934-10-60	M10-1.50	Standard
M934-10-60F	M10-1.25	Standard
M6923-10-80	M10-1.50	Spiralock
M6923-10-62	M10-1.50	Spiralock†
M982-10-80	M10-1.50	Elastic Stop
M934-12-60	M12-1.75	Standard
M934-12-60F	M12-1.25	Standard
M6923-12-80	M12-1.75	Spiralock
M982-12-80	M12-1.75	Elastic Stop
M982-14-60	M14-2.00	Elastic Stop
M6923-16-80	M16-2.00	Spiralock
M982-16-80	M16-2.00	Elastic Stop
M934-18-80	M18-2.5	Standard
M982-18-60	M18-2.50	Elastic Stop
M934-20-80	M20-2.50	Standard
M982-20-80	M20-2.50	Elastic Stop
M934-22-60	M22-2.50	Standard
M934-24-80	M24-3.00	Standard
M982-24-60	M24-3.00	Elastic Stop
M934-30-80	M30-3.50	Standard

## Washers

Part No.	ID	OD	Thick.	Bolt/ Screw
M125A-03-80	3.2	7.0	0.5	M3
M125A-04-80	4.3	9.0	0.8	M4
M125A-05-80	5.3	10.0	1.0	M5
M125A-06-80	6.4	12.0	1.6	M6
M125A-08-80	8.4	16.0	1.6	M8
M125A-10-80	10.5	20.0	2.0	M10
M125A-12-80	13.0	24.0	2.5	M12
M125A-14-80	15.0	28.0	2.5	M14
M125A-16-80	17.0	30.0	3.0	M16
M125A-18-80	19.0	34.0	3.0	M18
M125A-20-80	21.0	37.0	3.0	M20
M125A-24-80	25.0	44.0	4.0	M24

† This metric hex nut's hardness is grade 8.

## Notes

## Notes



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Singapore 619159  
Phone (65) 6264-6422, Fax (65) 6264-6455